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DISCUSSION ON TORQUAY CONGRESS PAPERS.

No. 4.—The Veterinary Surgeon in Relation to Meat Inspection.*

At the first session on the afternoon of Wednesday, 14th September, the Chairman (Major-General Sir John Moore, K.C.M.G., C.B.) said: I feel a particular pride in taking the chair this afternoon, because both essayists happen to have been very valued servants of mine in France. I always think that the best chairman is he who says very little, and I propose therefore to ask Col. Dunlop Young to commence straight away, with any introductory remarks he may wish to make.

Col. Dunlop Young: I do not think there is anything I have to say by way of preface. No member of the profession takes a bigger interest in the profession than Sir John Moore, and I am very pleased he is occupying the chair this afternoon.

Major J. A. Dixon, T.D., Chief Veterinary Inspector, (Leeds): At the outset I must apologise for my temerity in appearing in the capacity of a speaker on this my first attendance at a meeting of the N.V.M.A., but I should explain that I am merely a substitute, for a few weeks ago Mr. Gofton wrote to me asking if I would open the discussion in his stead, as he would be unable to attend.

I should like to compliment Lt.-Col. Young on a paper which is very comprehensive, and which covers the ground so thoroughly and well that adverse criticism is impossible, and I propose to follow the lead already given at the meeting of amplifying and emphasising certain more important items.

Col. Young's paper is easily divisible into two parts, the first dealing with the places of slaughtering, and the second with the qualifications of inspectors. With the first part of the paper I am in complete agreement: the ideal is the establishment of public abattoirs and the complete abolition of private slaughterhouses. I would emphasise, however, that even if a public abattoir existed, no system of meat inspection could be considered satisfactory so long as one private slaughterhouse remained. I desire to direct your attention to the strong recommendations of the Departmental Committee on this point, which ends with "any legislation, however, should include the necessary compulsory powers for closing, acquiring, altering and dealing with premises, and for enforcing schemes of centralised slaughtering."

This should be contrasted with the Government.'s action on the point, as contained in a circular letter: "Apart from any legislative action which may be taken in this matter it seems to the Minister that in many cases a local authority might be able to initiate a co-operative arrangement amongst the local butchers under which a number of the less sanitary buildings would cease to be used as slaughterhouses, and fuller use would be made of the better equipped buildings." The suggestion herein contained has been acted upon by some local authorities, but nowhere with success. It is always found that the owners or occupiers of selected slaughterhouses refuse to accommodate the others, whilst the others refuse to go to another man's establishment.

In my opinion it is deplorable that the legislation foreshadowed by the Committee has not yet been effected, and that the control of slaughterhouses in England outside London still rests basically on a Statute of 1847. Local authorities can only make slaughterhouse byelaws concerning registration, licensing, and the management on the authority of the Public Health Act of 1875, as amended by the Public Health (Amendment) Act of 1890, which merely brought forward the slaughterhouse provisions of the Towns Improvement Clauses Act of 1847, whilst both London and Scotland have more recently revived attention in public health matters and have much greater control over their private slaughterhouses. The Public Health (Meat) Regulations of 1924 did give a little more control over slaughterhouses by forbidding their use for domestic washing, tripe cleaning, gut scraping, and the preparation of food for animals or man, and by demanding notification of slaughtering, and of disease. They give considerable assistance in obtaining more complete meat inspection, but I would point out that the regulations on notification of slaughter, by providing such wide exemptions, greatly mitigate their usefulness, and it is still possible, and within the law, for a butcher to slaughter an animal and remove both carcase and offal before they have been inspected. I admit, also, that the Rural District Councils (Slaughterhouses) Order has been beneficial in bringing country slaughterhouses under some kind of control for the first time, but I would urge that the time is overdue for local authorities to be armed with greater legal powers, and that in the interest of public health they should be immediately assisted in the complete abolition of all slaughterhouses which, in the words of the Departmental Committee, are "obsolete, insanitary, or otherwise objectionable from a public health point of view."

Before leaving this part of the paper, I beg to be allowed to add a few words on public abattoirs. It would appear that to many people the term public abattoir suggests an elaborate and expensive building, and that councillors are often appalled at the prospective cost, and therefore refuse to consider the subject, whilst meat traders in large towns and cities are often strongly opposed to the project because of the distances between the public abattoir and their suburban shops. To meet these objections I suggest that a central public abattoir need not be elaborate or too expensive, and I propose the establishment in cities and

* Paper presented by Lt.-Col. T. D. Young, O.B.E., M.R.C.V.S., D.V.S.M., Veterinary Inspector for the City of London.

large towns of subsidiary and smaller public abattoirs in outlying districts in addition to the central abattoir. In many places, existing buildings, such as disused small works, could easily be converted into good public slaughter-houses, for the retail butchers of adjoining areas, and these subsidiary public abattoirs should each be under the control and supervision of an assistant veterinary inspector or a properly-trained lay inspector, in telephonic communication and under the direction of the chief veterinary inspector. By these provisions butchers would be deprived of their only legitimate objection to a public abattoir,—distance to and from their shops—and at the same time efficient meat inspection would be secured.

As regards the qualifications of inspectors, all present will agree with the essayist that the only properly trained and educated meat inspector is the modern veterinary surgeon, and the profession is indebted to the essayist for collecting and presenting to us such a mass of evidence, from what may be called non-veterinary sources, supporting that contention. It would appear that, next to the consuming public, the people most interested in meat inspection, viz., the butchers, are the most insistent in demanding veterinary surgeons as meat inspectors, as evidenced by the considered opinion of the National Federation of Meat Traders, so pertinently quoted by the essayist, but I would remind the meeting that to be a competent meat inspector the veterinary surgeon requires some training and practice, in which connection the training demanded of candidates for the D.V.S.M. is essential, and will ensure that the possessors of that diploma are competent to carry out the duties of meat inspector.

I can only deplore that the English Departmental Committee, which has admittedly copied the example of the Scottish Committee on so many points, has not followed them also regarding the qualifications of Inspectors. Speaking as one who has taught and examined sanitary inspectors in meat inspection for twenty years, I may say that these men have received only so much instruction as to enable them to keep out of trouble and that the best of them are very frequently calling for the advice and guidance of a veterinary inspector. These men are sufficiently trained to enable them to do a little meat inspection with their many other duties, but by no stretch of imagination can they be considered competent meat inspectors : it is often surprising how such candidates acquire such a good knowledge of the subject ; but there now exists a class of men eminently suitable for further training as lay assistants in meat inspection, *viz.*, the young man now being instructed in butchering by the organisation of the Meat Traders, along with Education authorities. The best of these trained and educated young butchers should be taken and, under veterinary training, could be made into reliable and efficient assistants, but in every case they should be allowed to act only under veterinary supervision. In this connection, I would delete the " or " in the paper, and say that the veterinary inspector should be supplied with veterinary and lay assistants as necessary. The organisation required for every town is a veterinary department which will undertake all the veterinary work regarding horses, and the Diseases of Animals Acts, and, under the Medical Office of Health, the veterinary work of the Milk and Dairies Acts and Orders and Food Inspection. All lay assistant meat inspectors should be under the supervision of the whole-time veterinary inspector. In the counties a similar organisation is required : every county should have its whole-time chief veterinary inspector with sufficient whole-time veterinary assistants to undertake all the veterinary duties under the Diseases of Animals Acts and Orders, and the Milk and Dairies Acts and Orders : these officers should assist and co-operate with the County Medical Officer of Health in the supervision of the slaughterhouses and meat inspection in the many urban and rural sanitary districts comprising the county, not omitting the training of the sanitary inspectors, who would act as assistant meat inspectors in their own districts. (Applause.)

Mr. R. W. HALL (Barry) : As one who performs the duties of meat inspector in conjunction with general practice, in this work as a part-time officer, I trust my views will be of interest and may say I deem it a compliment not only to myself but to other part-time veterinary officers that I should have been asked to open the discussion jointly with Major Dixon. I make no apology in saying that in the Barry Urban Authority, the authority for whom I act as meat inspector, we have a body of men which, as far as meat inspection and other public health matters are concerned, it would be of great public benefit if other authorities would emulate. They have erected an up-to-date public abattoir, they have appointed a veterinary surgeon as meat inspector, and they have given him the same power, by Act, as is given to the medical officer of health and sanitary inspector in the Public Health Act, 1875,—that is, power to inspect meat and condemn and seize unsound food. Moreover, they have introduced clauses in their byelaws dealing with the abattoir which prevent intermixing of organs and offals, and also the removal of carcases, organs and offals before they are inspected. With these facilities the duty of efficient meat inspection by a part-time veterinary officer is made comparatively easy, but I quite appreciate that the favourable conditions which exist in Barry for meat inspection work only exist in a few places, and that in the majority of small and even large towns, urban areas and rural districts private slaughterhouses are predominant ; but still, in spite of the great handicap which the lack of public abattoirs must entail in the performance of efficient meat inspection, better and much more general use could be made of the veterinary surgeon as a whole- or part-time officer for that purpose.

Col. Dunlop Young asserts that the veterinary surgeon is, by the nature of his professional training, the *only* person who is qualified adequately to perform this important work, and this claim is amply supported by departmental committees, and such undisputed authorities as Professor Leighton, Professor Symmers, and Alderman Neal. It therefore does seem a paradox (seeing that it takes at least four years to qualify as a veterinary surgeon) that the majority of men who perform the duties of meat inspection throughout England and Wales should be deemed capable of performing this important work after an intensive training of a few weeks, and it gives rise to the question : Is the position of the veterinary surgeon in relation to meat inspection satisfactory ? It is true that

in most large cities whole-time veterinary officers are employed in this work, but in many large and small towns, urban and rural areas there is no veterinary officer employed for such purpose, and, knowing these facts, it makes one wonder why such a state of affairs exists and, knowing it does exist, ask, what are the reasons ? Is not one of the reasons that the veterinary profession has no representative at the Ministry of Health to urge our unquestionable claim that we are, as a profession, an essential in the wheel of progress of public health ? For instance, I believe that if veterinary officers were mentioned in the Public Health (Meat) Regulations of 1924, (a Regulation introduced by the Ministry of Health) local authorities could and would appoint whole or part-time veterinary officers for the work ; that it would be no more difficult for a veterinary officer to visit and inspect meat an at urban and rural slaughterhouse than for a sanitary inspector.

I agree that the ideal to attain for efficient meat inspection is the public abattoir, but we must deal with things as they are, at the same time losing no opportunity of impressing upon the public and the powers that be the great advantage of the public abattoir from a public health point of view.

Sir JOHN MOORE : During my service I was never once asked to inspect meat for the army. It is quite different, though, in the American Army. I know the American Army meat inspection policy, and can say that from the point of view of meat inspection it is the best protected army in the world.

Mr. T. PARKER (Newcastle-on-Tyne) : I congratulate Col. Young for so ably and concisely putting on paper what has been done to place meat inspection on a concrete basis. According to the discussion which has taken place, it appears to have centred more or less on equipment and administration. I was particularly pleased to hear the remarks of the last speaker, which showed how well he was able to deal with the subject in his own district, but I was rather disappointed with my old friend, Major Dixon, when he was laying it down that the veterinary officer would not be recognised as chief of a meat inspection department. If it be absolutely correct to say that with the training obtained during a college career and afterwards, the veterinary surgeon is the proper person to inspect meat, surely such an individual, if properly equipped to carry out that part of the work and become a chief officer, should be sufficiently capable of administration.

In a large city where you have administrative officers for public health work you have your medical officer and your veterinary officer, and the advantage of both attending the health committee meetings. Instructions are understood by both officers that they must co-operate. You may have a veterinary department and a health department, and each officer should be responsible for his own department. They each carry on their own work, and it is for them to co-operate and get the best out of the subject. Major Dixon has given his view as to the proper course, but he said this. He said that the veterinary officer could never be other than under the medical officer. I hold that that can be so, and that the veterinary officer should be directly responsible to the health committee or authority concerned.

With regard to equipment, Major Dixon referred to large cities and advocated having a collection of abattoirs. I am totally opposed to that system. In any large city a thoroughly equipped abattoir should be adjoining a railway. What he has described in relation to a city I would apply to a county. So far as a county is concerned, you can imagine it sectioned up into ten or twelve areas. In each you would have a part-time medical and a part-time veterinary officer. But there should also be a whole-time veterinary officer. He would be a veterinary inspector under the Diseases of Animals Acts, and also an officer under the Public Health Acts. The local veterinary officer would be expected to examine from time to time, and would have lay inspectors to assist him who would call him in. If any difficulty arose the local veterinary officer would consult with the chief veterinary officer of the county. He would confer with him, and get rid of all difficulties.

I think the remarks I have made on this subject apply equally to milk and dairy inspection, *i.e.*, you would have the chief veterinary officer in direct touch with the local authority. With large city and county authorities those of us who have to work with the medical officers get on exceedingly well with them, but unless you endeavour to get to the stage as outlined we, as a profession, will never attain the position which should be ours.

Major BRENNAN DE VINE (Birmingham) : I know the position of the veterinary officer in this country, owing to the 1875 Act, is rather difficult at the present time. Thanks to those who introduced the annual fee for veterinary surgeons, we are now getting to the point when the Royal College of Veterinary Surgeons will be in a position to fight the battle of the veterinary surgeon, so that he may get into his true position in public health work. The fact is the Act of 1875 has knocked him out all along the line, and until you get a new Act brought in saying that the veterinary surgeon holds a certain position you will not get proper meat inspection.

Major Dixon talked about private slaughterhouses. In Colonel Young's paper it is stated that there are 104 private slaughterhouses in Birmingham, but we also have a central abattoir, which is as good as any in the country. A few years ago we had 160 private slaughterhouses. When you hear that in London they have cleared out private slaughterhouses and had to pay over £20,000, if that is going to continue how can you expect to clear them out of this country until you have brought in an Act like that of Scotland. To my mind one central abattoir in a city is sufficient so long as you have good transport. The smaller the number of abattoirs you have in a city the better. One central abattoir which can be added to is much better. It is a reduction of expense to the local authority, and gives the inspectors a chance of seeing everything. When you go through the continental abattoirs you are more impressed with that point of view than with anything else.

I must agree with a great deal of what Mr. Parker said about the question of whole-time and part-time inspectors, but if all the part-time inspectors had the conditions which now obtain at Barry, I do not think there would be

much grumbling. If the administration were carried out by a veterinary inspector, it would bring more work into the veterinary profession. A lot of work that should be done by veterinary inspectors is now being done by other people, and a number of them are getting comparatively large salaries for doing work which should be carried out by the veterinary inspector. I feel there are many part-time inspectors who think that the whole-timer is trying to collar his job.

Mr. H. L. ROBERTS (Ipswich): I should like to add my quota of thanks to Col. Dunlop Young for his very valuable contribution to the Congress. I look upon his paper as a sustained effort by Colonel Young to help forward the subject of meat inspection, and complementary to his demonstration at Cambridge. There is one remark of Colonel Young's which I noticed, to the effect that it was impossible to close slaughterhouses by the local authority, and that in connection I might say that there is no law to compel butchers to use them, which means that you cannot shut up the local slaughterhouses, and make a man use the abattoir. Generally that is absolutely correct, but there are exceptions, and after a lot of hard work we have succeeded, to the satisfaction of the Royal College of Veterinary Surgeons and the N.V.M.A., in obtaining an Act of Parliament in the County Borough of Ipswich which, when put into operation, will enable us to close as many slaughterhouses as we think fit. But owing to economic reasons, the making of new roads, the scrapping of trams, which we have never paid for—(laughter)—and the institution of the trolley bus system, there is no money at present for our public abattoir. But there is a ray of hope. The Medical Officer of Health, Ipswich, who is related to our profession by his brother, informs me that the site is chosen, and collateral with that, the lease of our market is falling in, and we hope to carry out a dock system—a market close to our railway station, so as to prevent the racing about of stock in our streets on market day, and I am hoping that we shall have proper veterinary supervision in the County Borough of Ipswich. I shall do all I can to further the things I have had in view for a great number of years.

I was pleased to hear Major Dixon's remarks on abattoir construction. I have gone into the matter, and do not think the erection of an abattoir is going to be a cheap undertaking. I wish he would amplify his statement by saying what system he advocates: is it the "hall" system? Nevertheless, the main points that have been raised by him are those with which we are in agreement.

With regard to the remarks made by Mr. Parker, I would say, where are you going to get the money from?

The Clerk of the East Suffolk County Council asked me to get out a scheme for a whole-time veterinary service for the County of Suffolk, which I did. The Clerk showed my tentative draft scheme to the Chairman of the Diseases of Animals Sub-Committee, and they decided my figures were so high it was not practical to place my tentative scheme before the committee. If we part-time officials do all we can for the present, we must not put forward a scheme for whole-time veterinary officers in any great number of agricultural districts of England. (Applause.)

Major D. S. RABAGLIATI (Wakefield): I think that the Association is to be congratulated on having selected Colonel Young for the paper, as he possesses a "master mind" and a "master hand" in his subject. I am glad that he speaks well of the sanitary inspectors as a whole, for many of them are very keen, and do their best. I cannot understand why it is that if they can abolish private slaughterhouses in Scotland, they cannot do so in England, too. (Hear, hear.) In the West Riding of Yorkshire I know of two towns that have done away with all their private slaughterhouses and have erected public abattoirs which are used by everybody in the area. These are under the supervision of the sanitary authority, and, although they have not a veterinary officer, it is at least a step in the right direction.

Major Dixon showed you that you cannot have efficient meat inspection if you have a number of private slaughter-houses all over the area. To anyone like myself, who has just come to work in England, the position of meat inspection seems to be most unsatisfactory. In Egypt, where I lived for many years, there is a system in vogue very much like that prevailing in Scotland, where they have sanitary inspectors to examine the meat, but whenever anything is found to be wrong, the veterinary officer is called in to deal with the matter. In the West Riding of Yorkshire, I am glad to say that the county medical officer is anxious that the veterinary officers should be consulted in matters concerning meat inspection, but as there are about 151 different sanitary authorities, all of which are supreme in their own spheres, it is difficult to know how the county officials can be utilised. Although we are going to have some full-time veterinary officials, we have a large number of part-time veterinary inspectors whose services we hope to retain for some of the work, so that they might possibly be called in to help in this direction.

I was much struck the other day when seeing over a new bacon factory run by farmers on a co-operative basis. The factory is managed by a Dane who told me that his foreman, also a Dane, examined all the pigs' carcases, cutting into the glands, and if he found anything to be wrong, he called in the nearest sanitary inspector from the nearest town a few miles away. The manager said that for such a factory in Denmark there would be two fully qualified veterinary officers for the meat inspection alone.

I fully agree with Major Dixon when he says that we cannot cut out the medical officer as regards meat inspection. The medical officer must be supreme in all matters affecting the food of man. It would be of no earthly use in our fighting against the medical officer in any case, but what we ought to do is to gain his confidence, and if we are successful in doing so, then our opinions will be respected. The question of meat inspection varies greatly district by district, in fact it varies so enormously that there is no uniformity at all. (Applause.)

Capt. E. J. BURNDRED (Blackburn): I would like to add my thanks to Colonel Young for his admirable paper. We have heard quite a lot about abattoirs and their administration, and meat inspection there, together with the inspection of slaughterhouses generally, but the point I would like to emphasise is in connection with emergency slaughter. That probably affects the members of our profession more than any other branch of meat inspection.

We know that Colonel Young has experience of such cases, as we see accounts of proceedings taken at the

Guildhall with regard to carcases sent to London in a diseased condition. From what I have seen in many parts of the country there are still cases of emergency slaughtered animals the carcases of which are never submitted for inspection.

It seems to me that there is a moral obligation on every member of our profession, that in such cases he should inform his client of his obligations and give him the best advice possible, both in his own interests, and those of the community.

Capt. J. POLLARD (Halifax): The subject has been so fully dealt with by Colonel Young and other speakers that I feel there is very little for me to remark upon, but I must say I would prefer to have one central abattoir to a large number, on the grounds of supervision, expense, cost of administration, and so on. If there is one thing that meat traders feel a grievance about it is the lack of uniformity in inspection. They do not understand why meat, passed in one town as being fit, and taken into another may be condemned. There should be some mark on the meat so that the responsibility should be fixed and attach to the person who inspected it. (Hear, hear.) If that were done it would make the person in question or the authority more careful. The problem is: How can we attain any uniformity of inspection? Personally my own view is this: that until we have some representative at the Ministry of Health we shall have but a very slender chance of achieving that object. (Hear, hear.) At the present time the veterinary surgeon in public life is ploughing a very lonely furrow. He is neither one thing nor the other. I was inclined to think at one time that the National Association had not taken the action that they might have in this matter, but I have learned since that they have not been inactive in that respect. Colonel Young himself has been very active in trying to help veterinary surgeons and the profession generally, but I feel that no veterinary surgeon will be appointed to the Ministry of Health unless he possesses medical qualifications as well.

Scotland has been very fortunate in having Dr. Leighton at the head of the Foods Branch of the Scottish Board of Health and who, in his progressive administration, has proved very sympathetic to the veterinary profession. What will happen in Scotland if we have a successor appointed who is not so sympathetic to our profession as Dr. Leighton is, I do not know. (Applause.)

Captain Ross GRANT (Australia): Anything I may say need not be taken as criticism. I am only a visitor, and any comparisons I may be permitted to make should therefore be taken as meaning well.

I do not think you will have success in any system of meat inspection unless it is centrally established. The export system in Australia is all carried out under central systems. The meat for local consumption is also carried out under a central system. The great difficulty that we have to contend with in Australia is in dealing with the country districts, where you have an inspector who has to cover a large area and inspect a large number of establishments. You must see the animal before and at the time of slaughter. Any other system of inspection is inadequate.

All our meat is killed locally. One central abattoir for a place of the size of Sydney, where you have a million people, is becoming unwieldy. Therefore, I am in favour of Major Dixon's idea of establishing one central abattoir with abattoirs subsidiary to it.

Some speakers appeared to consider that the veterinary officer should always be under the medical officer. I have spent quite as much time over my studies as has a medical officer, and it is very irksome indeed to be placed under a man whom you know has not got the knowledge, or indeed anything like the knowledge, that you possess yourself. I am not placed in that unhappy position because in Australia we are responsible to our chief veterinary officer. You will never attract the best men to meat inspection if they are to be placed in that position. The examples that we observe in other countries show that. After all, what the public is concerned with is to get healthy meat and disease-free milk. The only man who is competent to see to that is the veterinary surgeon. After the handling it can be under other officers, but healthy meat and milk should be under the sole control of the veterinary surgeon. (Hear, hear.) We have found that the men who have had practical experience of butchering—young fellows of from 18 to 25 years of age—turn out to be the best men for the job.

I would like to compliment Col. Young on his paper. It is nothing more than would be expected of him. He is not only one of the best workers in the interests of the profession that we have, but also one of the most efficient officers it would be possible to find. (Applause.)

Dr. R. W. TUCK (United States of America): My views on meat inspection, with an experience which extends over 29½ years' actual practice, do not coincide with yours. In the matter of the private and public abattoir, it all depends, for meat inspection, what kind of a place you have. The question is: Is meat inspection established to increase trade or to protect the public health? To the borough to which I belong it is established to protect public health. In the United States, under federal supervision, I do not think we have a dozen public abattoirs.

In the matter of supervision by a medical officer,—we have none. We employ veterinary officers. All the way down the line the veterinaries have all the work. (Applause.) My experience for several years has been largely gained by instructing medical men on meat inspection alone. We find that the medical fraternity co-operates with us and assists us.

Who are to be the lay inspectors? There seems to be an opinion here that a butcher makes the best lay inspector. From my experience I do not find that. He wants to be the meat inspector himself, and for that reason it was found necessary to bring in young men and train them as veterinaries.

I compliment Colonel Young on his paper. (Applause.)

Mr. H. L. TORRANCE (Birkenhead): I should like to add my quota of thanks to Colonel Young for his excellent paper. It is not less, however, than we would expect from a man who is one of our greatest authorities, if not the greatest, in this country on meat inspection.

A good deal has been said about the status of the veterinary officer. It must not be forgotten that a great deal depends on the medical officer with whom one is associated.

Where he is a broad-minded, unselfish, progressive official realising the importance of the special knowledge of the veterinary surgeon in relation to public health, a most satisfactory state of affairs exists. Unfortunately, it cannot always be so, and that is why I think a little more independence for veterinary health officers is necessary.

In every case the veterinary officer should attend the meetings of the health committee to advise on matters pertaining to his special knowledge. Where this is not done the ratepayers are not getting the complete benefits accruing from the presence of a veterinary surgeon on the staff of the local authority.

With regard to the relationship between part-time and whole-time veterinary inspectors, from conversations I have had with many members of our profession, I fear that the part-time official is a little afraid that he is going to suffer financially by the appointment of whole-time veterinary officers. This is a mistake, I think. I feel certain that these appointments will lead to increased work for the profession as a whole, and that they would be of very great benefit to the community.

I can see that with few exceptions the part-time veterinary inspector is drifting completely into the clutches of the medical officer of health and the police, and I suggest that if their object is to get into the hands of the police there are many more interesting ways of doing it than by doing an honest job of work. (Laughter.)

The Reply.

Colonel T. Dunlop Young (City of London): I want to thank you first for the honour of having been asked to prepare this short paper for you. Secondly, I want to thank you for the way that you have received it. You have not attempted to create a destructive criticism, but wisely given it a constructive criticism. It is, of course, always very easy to be destructive—anybody can pull down,—it is not so simple, however, to build up. (Hear, hear.) Captain Ross Grant and Dr. Tuck, the last two speakers, are examples of our colleagues working beyond the seas; they are good fellows. We have at times had to condemn meat that has come from their countries, for we can never expect one hundred per cent. efficiency in meat inspection any more than in other work, and the human element must always be taken into account. (Applause.) Any decision given by us as to unsound food which had escaped the notice of their inspectors in their countries, is never questioned by these officers, but every endeavour is made to see that errors do not recur. (Applause.)

Our good friend Dr. Richelet from the Argentine, is so modest that he will not express his views in English, but I happen to know what those views are, and he is one of the finest types of men that we have. (Hear, hear.) As a matter of fact, he can speak Spanish, French and English, but evidently considers that the old adage—a silent tongue makes no trouble—is his best course. I want to compliment Dr. Richelet on the system of inspection in Argentina. His Government paid me the high honour of asking me to look over it in 1913, and I do not hesitate to say they are going on the right lines in an endeavour to send to this country, or any other country, meat subjected to an efficient system of inspection by veterinarians without any other control.

With regard to Major Dixon's remarks as to subordination, I feel sure that he did not mean that any of us were going to be clerks or office boys to a medical officer; no self respecting veterinary officer would submit to that, and no good medical officer would want us to be so. There is a good deal to be done by tact on both sides, and if we adopt the right attitude all will be well.

I want to pay a compliment to Dr. Howarth, Medical Officer of Health for the City of London, who, I regret to say, has been suffering from bad health. I have always had the greatest pleasure in working with him. If in a court of law any question arises as to the pathology of disease affecting an animal, Dr. Howarth leaves that to me, and if I am asked by the magistrate what effect the eating of diseased meat would have on a human being, I always say: "I prefer to leave that to the medical officer of health." What Major Dixon meant, I think, was that the last word as to what should go down a man's throat should be left to the medical man.

Major Dixon stated that, in his opinion, many of you were not fit be to called meat experts, but the training you have all got provides you with the ground work to become quite efficient meat inspectors, (hear, hear) and now that we have got a new principal of the Royal Veterinary College, London, I hope he will revive the holding of refresher courses. (Hear, hear.) I also hope that courses for the D.V.S.M. will be introduced in the London College as early as possible.

As far as our position in legislation is concerned, I want to assure you that the men you sent to the Councils of the Royal College of Veterinary Surgeons and the National Veterinary Medical Association have not by any means been lax in keeping this subject before them; they are doing everything that lies in their power to further and protect your interests. (Applause.)

In my opinion, Local Acts will never do us much good; we want a new Public Health Act, and in it the recommendations of the Departmental Committee on Meat Inspection adopted.

Major Dixon stated that a butcher could move meat if he gave a note to the effect that he would be killing every day in the week, but he cannot remove anything between 7 p.m. and 7 a.m. There is also a clause which prevents the butcher from removing anything that is of a doubtful nature. He must notify the sanitary authorities that he has diseased or suspected meat on his premises, and must not remove it.

Captain Burndred was quite right in his remarks about emergency slaughtering of animals; it is a very serious matter. We have in the City of London a very bad case under consideration just now. The lack of uniformity in districts is the great weakness of meat inspection in this country.

Captain Pollard spoke about meat passing from one district to another and meat being condemned in one district which had been passed in another. Of course there should be compulsory marking, and I have always advocated it.

It has been stated that you cannot understand why public abattoirs are not being built. I had a talk with Sir George Newman on this subject and he stated that with

(Continued at foot of first column next page).

No. 5.—The Diseases of the Cow considered in Relation to Milk Legislation.*

Major-General Sir JOHN MOORE, who took the chair at this session at 4-30 p.m., on the afternoon of Wednesday, 14th September, at once called upon Mr. S. G. Abbott, of Sheffield, to read the paper sent for opening the discussion by Mr. J. S. Lloyd, of Sheffield, who was prevented by ill-health from attending.

Mr. J. S. LLOYD, F.R.C.V.S., D.V.S.M. (Sheffield): Mr. President and Gentlemen: I regret exceedingly that my health will not allow me to make the journey to Torquay and open this discussion in person. However, according to promise, I send you a few notes which will be read for me.

With the general tone of Major De Vine's paper I am in agreement. There are, however, some statements which I would like to criticise and others which I would like to amplify.

In paragraph 6 he states that the Milk and Dairies Order (Part 4, Section 8) provides that every county council and county borough council shall carry out the inspection of dairies and milking cows, but it is common knowledge now that a large number of county councils are not proceeding with the routine inspection of dairy herds, apparently basing their decision not to do so upon Articles 18 and 19 of Circular 757 issued by the Ministry of Health on January 20th, 1927. These Articles state, in regard to inspection of cattle, that "The minimum which could be regarded as satisfying the requirements of Article 8 of the Order would be such inspections as are necessary for the purposes of Sections 3 and 4 of the Act, and for investigating cases where some definite cause of suspicion exists, such as the discovery of tubercle bacilli in a sample of milk."

It is for each county council to decide, according to the experience available in their area, what amount of further inspection is desirable. It was not considered practicable, in view of the varying circumstances of different counties, to require in the Order that county councils should undertake the regular periodical inspection of all dairy cattle. Inspection conducted on purely routine lines may not, in all cases, be the best means of attaining the objects of the Act. The Minister is, however, aware that some local authorities have, in the past, carried out periodical inspections, and have been satisfied that the results were beneficial. Where these conditions exist it is suggested that the county council should consider the advisability of continuing the established practice.

As I shall endeavour to point out later, the decision of the county councils goes a long way in nullifying the advantage of the Milk and Dairies Act and Order dealing with tuberculosis.

Following on this statement, Major De Vine rather jumbles up the diseases of cows affecting, or prohibiting, the sale of milk from such diseased animals. All the diseases mentioned in his list, with the exception of three, either are included in Article 5 of the Milk and Dairies Act or in Schedule 2 attached to that Act, whilst three only are mentioned in Article 11 of the Milk and Dairies Order.

It is true, as mentioned by Major De Vine, that an additional sentence empowers the Minister of Health to include any other disease affecting cows which, by a Milk and Dairies Order, is declared to be a disease for the purpose of Section 5 of the Milk and Dairies (Consolidation) Act 1915. This sentence gives the Minister of Health very wide powers, but apparently, by reading other sections of the Milk and Dairies Order 1926, it is not intended to include any infectious disease of human beings such as was the subject of so much discussion in the Hendon case, and which was at that time wrongfully attributed to milking cows. In Part 1, Section 2 of the Milk and Dairies Order 1926, "Infectious Disease" is defined as meaning dysentery, and any infectious disease to which the Infectious Diseases (Notification) Act 1889 applies and with which Sections 17, 18 and 19 give the medical officer of health power to deal.

For a reason which will be obvious before I complete my remarks, I propose to deal with the diseases mentioned in alphabetical order:—

Acute Inflammation of the Udder. In the wording of the Milk and Dairies (Consolidation) Act 1915, some confusion seems to exist between acute inflammation of the udder and acute mastitis, both terms being mentioned, one in the Act itself and the other in the Schedule. Suppuration of the udder is also given a separate heading. In my opinion, inflammation of the udder should be dealt with as a whole in its acute, sub-acute, and chronic forms. The acute form, as is well known, rapidly changes the character of the milk from the affected quarter or quarters of the udder, although it is possible that in the very early stages the alteration to the milk secreted is so small as to escape the notice of the milker, and particularly is this the case when the cow affected is a nervous, irritable and pugnacious animal, the milker putting down the irritation of the animal as being due to its ordinary nature, whereas in many cases it is due to commencing inflammation of the udder. The symptoms and conditions are pretty accurately described in the remarks of Major De Vine in his paper and need not be mentioned further here. The termination of acute mastitis may be resolution or it may tend to sub-acute inflammation or chronic induration of the affected quarter or quarters. In these very acute cases, where the disease is of septic origin and tending to

(*Continued from previous page*).

the present state of the country, the high cost of living, the scarcity of housing, and so on, it would be impossible to do anything at the present moment, as the housing of the public was more important than the erection of public abattoirs, but the matter would not be lost sight of when the cost of living became less, and the rates were lower.

It is in the interests of the farmer, the butcher, and the public that meat inspection should only be carried out under the supervision of properly qualified men.

Captain DUNLOP MARTIN: It has been said that it was impossible to appoint a veterinary officer as a veterinary officer to the Ministry of Health—I should like to know why.

Colonel DUNLOP YOUNG: I am informed that until we get the Public Health Acts amended there will always be this same difficulty.

*Paper presented by Major Brennan De Vine, M.C., F.R.C.V.S., D.V.S.M. (Vict.), Superintendent, City of Birmingham Veterinary Department.

gangrene of the udder, death often occurs. In other cases (and I now include suppuration of the udder) the disease terminates in abscess formation either in the duct, the sinus, or texture of the affected quarter, and the result, so far as secretion of milk is concerned, depends upon the site of the abscess. My experience has been that if you get abscesses formed in the duct or sinus of the teat the resulting changes cause occlusion of the teat and milk secretion is absolutely prohibited. On the other hand, if the abscess formation is localised in the texture of the udder, the lining membrane of the duct and sinus being not affected, it is possible to get a normal secretion of milk from the quarter when the abscess has been evacuated and the remaining tissue of the affected quarter becomes normal. Chronic inflammation of the udder is of most importance because of its similarity to tuberculous induration of the udder. This leads us to the question as to whether or when cows that are or have been suffering from mastitis should be again allowed to produce milk for human consumption. Article 5 of the Milk and Dairies (Consolidation) Act definitely prohibits the sale of milk from cows giving tuberculous milk, affected with emaciation due to tuberculosis, tuberculosis of the udder or acute inflammation of the udder or any disease specified in the second Schedule to the Act, and, provided the owner of the cow had received notification of the condition or could have ascertained that the animal was so affected, he is liable to prosecution. Article 11 of the Milk and Dairies Order also specifies that, in addition to the diseases mentioned in Section 5 of the Act, any comatose condition, any septic condition of the uterus, or any infection of the udder or teats which is likely to convey disease shall be diseases for the purposes of Section 5 of the Act, whilst Sub-sections 1 and 2 of the Article provide power to give notice prohibiting the use of the milk from such affected cows.

It thus appears quite clear that the sale and use of milk from cows affected with acute, sub-acute or purulent mastitis should be entirely prohibited until the udder is wholly healthy. It is not permissible to use the milk from three-quarters of a cow so affected in the fourth quarter. As regards chronic interstitial mastitis, as this may well be considered suspicious of tuberculosis, the milk from the udder of such a cow should not be used for human consumption until the milk has been subjected to the biological test and proved to be non-tuberculous.

Actinomycosis. This, as mentioned by Major De Vine, is not a common disease affecting the udders of milking cows. In some parts of the country actinomycosis is practically unknown, whilst in others the disease is more prevalent, and in such places the disease affecting the udder is more common and may or may not be complicated by pustular formation. The same remarks apply to the use of the milk as those previously mentioned in the case of chronic interstitial mastitis or suppuration of the udder.

Any Comatose Condition. Major De Vine has not dealt with this condition in his paper, and I am at a loss to know what is meant by the term so far as milking cows are concerned. The only specific disease of cows coming to my mind is parturient apoplexy or milk fever, and veterinary surgeons, at any rate, know that secretion of milk in such cases is practically non-existent, and I cannot conceive the milk from such animals (if any is secreted) being offered for sale or used for human consumption.

Any Infection of the Udder or Teats which is likely to convey disease. Major de Vine mentions the conditions which would probably come under this definition, and so long as the Minister of Health does not confuse infectious disease of human beings sometimes attributed to the same disease in milking cows, little objection can be taken to the description. I agree with the essayist that milk from cows so affected should not be used for human consumption.

Any Septic Condition of the Uterus. This condition, I believe, was not included in the original draft copy of the Milk and Dairies Order sent out for the consideration of local authorities, and I remember bringing the matter to the notice of the Sheffield authority and advising that it ought to be included in the Order which would be made. The animal may be in a high state of fever and obviously very unwell, particularly when the placental membranes are retained, causing a large collection of stinking discharge escaping from the vagina and soiling the cow's tail, buttocks and udder, to say nothing of the decomposing and stinking part of the placental membrane hanging from the vagina. Even when the latter has been removed, large quantities of foul-smelling discharge continue to escape, and I agree with the essayist that cows so affected should not only have their milk prohibited for sale or use for human consumption but the animals themselves should be isolated from other cows in milk or other breeding cows or heifers. Not only is this advisable as regards the milk supply but as regards the spreading of contagious abortion.

Anthrax. With Major De Vine's remarks regarding the milk from animals affected with anthrax I am in total agreement. My procedure for many years has been, when an outbreak of anthrax occurs amongst milking cows on a farm, to go through the entire herd at least once daily, finding out if any cows are refusing food or otherwise showing symptoms of ill-health and immediately taking the temperature of such cows. Any cow exhibiting a rise in temperature is at once ordered from the cowshed for isolation. Of course, the ideal method would be to remove the apparently healthy cows from the infected cowshed to clean premises, but at the majority of farms this is impossible and, provided adequate and proper disinfection has been carried out so far as possible, it is unnecessary.

Foot-and-Mouth Disease. So far as the lesions of this disease affecting the udder are concerned, the disease could very well be included with variola under the infection of the udder or teats which is likely to convey disease. Cases have been reported where persons consuming the milk from cows affected with foot-and-mouth disease have been discovered as suffering from the same complaint. Under the existing legislation and procedure dealing with outbreaks of foot-and-mouth disease, this is unlikely to occur in the future except in cases where the owner has failed to recognise the disease or failed to report his suspicions about it.

Tuberculosis. I have left this disease until last because there is no doubt that it is of most importance to producers and consumers of milk from a consuming point of view, and it is also of great importance to farmers from a productive and economic point of view. Since 1925

the Tuberculosis Order has dealt with three classes of animals affected with tuberculosis :—

(1) Any cow which is, or appears to be, suffering from tuberculosis of the udder, indurated udder or other chronic disease of the udder ; or

(2) Any bovine animal which is, or appears to be, suffering from tuberculous emaciation ; or

(3) Any bovine animal which is suffering from a chronic cough and showing definite clinical signs of tuberculosis.

As it is very uncertain when a cow affected with tuberculosis begins to secrete tuberculous milk, it is of importance that cows affected with the disease to any considerable extent should be immediately dealt with and that the milk of any cow reacting to the tuberculin test should be dealt with in a manner calculated to destroy any tuberculous infection should it be present. It will thus be seen that any measures taken for the eradication of tuberculosis in milking cows or any class of bovine animal constitute a tall order and consequently a very large amount of money is at stake.

Major De Vine in his paper has dealt pretty fully with the conditions met with, and they need not be repeated. I desire, however, to emphasise his remarks, as pointed out by my peper at the Hastings Congress lately, that the steps taken at present, with the exception of those taken voluntarily by a few advanced farmers, do little or nothing towards eradicating the disease, although it must be admitted that the prompt slaughter of cows giving tuberculous milk removes a source of infection to human beings or animals consuming that milk and that prompt steps taken to deal with wasters and cases of "open" tuberculosis remove sources of infection to other bovine animals. It is, however, only after such animals have done considerable damage that they are removed. Consequently, to minimise the incidence of tuberculosis against farm animals and minimise the sources of infection both to human beings and other bovine animals, some steps should be taken by the Government to deal with tuberculous disease in cattle in earlier stages than at present. I have no hesitation in saying that the veterinary profession should take the leading part in dealing with this matter —in fact, if they do not, it is possible that others may step in and do the work and get the credit for it.

What active measures can be taken, or ought to be taken, to deal with this disease ? Apparently there are three ways by which tuberculous disease amongst farm animals can be minimised and some steps taken towards eradication. First we have the Tuberculosis Order in existence and, in my opinion, nothing like sufficient value is got out of this Order in dealing with the disease. Prompt notification is conspicuous by its absence—both owners and veterinary surgeons in attendance are required to notify cases suspicious of tuberculosis : in how many cases is this done ? My experience tells me—only a few. Secondly, some steps should be taken to encourage voluntary testing of bovine animals for tuberculosis and means for detention, isolation and, in the case of milking cows, dealing with the milk in such cases. Years ago Professor Delepine and Dr. Niven, of Manchester, suggested a scheme by which agricultural districts could be dealt with in groups, all the cattle in a given group to be tested with tuberculin, certain of the farms set apart where the reactors could be kept until definitely sent for slaughter, and other farms where after proper disinfection the non-reacting animals could be kept, re-tested under supervision, and by that means entire herds of tubercle-free cattle could be estab lished. I am of opinion that if sufficient pecuniary advantages, either by compensation for animals condemned or bonus granted per animal for herds free from the disease, were granted to farmers willing to establish tubercle-free herds, such farmers would be encouraged and others stimulated to take the necessary steps because of the assistance offered, not having to bear the whole cost themselves. If some such scheme was established, the branding of reactors would be justified and would be dealt with without any serious loss to the owners, but at the expense of the country as a whole.

At first it may be worked as a voluntary system, but if certain advanced farmers in a district agreed to do this, other farmers dealing in the same district should be compelled to come into the scheme. In that way what may be called islands for tuberculosis eradication could be formed and examples would thus be set to the rest of the country. The knowledge gained by the steps so taken would be of advantage to the farming industry, to the consuming public, and to the Government. Farmers would know the benefit received from having tubercle-free cattle, the consuming public would be guaranteed supplies of meat and milk from such cattle and the Government would know what it would probably cost the country if if some such scheme was made compulsory throughout the land. There is a third step, which will probably advance, in dealing with the establishment of tubercle-free herds, and that is mentioned in Major De Vine's paper by the word "vaccination." Steps have been taken on the Continent and are being taken in this country by more than one group of enthusiasts in this direction, but as the result of any action taken is as yet practically unknown, it is uncertain as to what the value of the step may be. Some Government grant to foster these steps would be money well spent and, as Major De Vine says, it is better to spend money in trying to prevent the disease than to pay compensation for cattle that have caused considerable infection and in building sanatoria to deal with the victims.

In order that the veterinary profession may not be found wanting, I suggest that this Congress pass a resolution stating that the time has now arrived when some more active steps should be taken to deal with tuberculosis amongst farm animals, and that a Committee be appointed to consider the matter, and recommend any practical and useful measures they consider might be beneficial. (Applause.)

Mr. B. P. MALE (Reading) : All regret, I am sure, that Mr. Trevor Spencer is not here to share with Mr. Lloyd the duty of opening the discussion on this paper, and especially the reason of his absence. I have been asked to step into the breach at very short notice.

The subject is a very important one, as a great many veterinary surgeons are required to carry out inspections under the Milk and Dairies Act and Orders, also the Tuberculosis Order, and as Chairman of the Veterinary Inspectors' Committee I know well the difficulties met with by them. A very exact knowledge is required

in order to say what conditions met with in the cow may be harmful to man so as to inflict no hardship on the dairyman and at the same time to protect the public.

I hoped that Mr. De Vine would, in view of his position and experience, have given some definite and precise views on this matter.

The cow has from time to time been blamed by public health authorities for causing a number of diseases in the human subject when the source of infection was the contamination of milk, after it left the cow, by diseased human beings or carriers of disease organisms. It can hardly be possible that Mr. De Vine subscribes to this, though some of his remarks might seem to bear this interpretation, *e.g.*, on page 103 he says: "The cow is the subject of many specific diseases and many of these diseases are common to the cow and man."

Now, with the exception of tuberculosis, there are no specific diseases in this country common to the cow and the human subject, except actinomycosis, anthrax, and foot-and-mouth disease.

Actinomycosis is very rare. In anthrax the cow dies very quickly and, while not minimising the danger of milk from an affected animal, the disease is so readily diagnosable that there should be no mistake about it, while, with regard to foot-and-mouth disease, the condition is immediately dealt with by the Ministry of Agriculture, and severe restrictions are placed on all materials coming from the cow.

Again, on page 109, we read: "The consumption of milk from cows affected with variola is said to cause skin disease in man," but the essayist does not specify the nature of the disease. Although adults milking cows sometimes get an eruption on their hands or arms, there is no case recorded, I believe, of an adult being any the worse for drinking *milk* from cows affected with this disease, although a slight rash has been observed in young children drinking such milk—whether this has been due to variola or to other conditions, it is difficult to say. Would Mr. De Vine prohibit the use of milk from cows affected with cow pox for human consumption? Some authorities contend that it should be prohibited; it would be a very serious matter, however, to stop the milk of a herd of cows so affected, as the condition usually lasts about three weeks. My own view is that it would tend to give some immunity from small pox, so its benefits would outweigh the possible slight ill effects.

Cows affected with cow pox have been said to have caused diphtheria, scarlet fever and septic sore throat, but we now know that this is not the cause and that in all of these cases the disease has risen from human sources, although it may have been spread by such contaminated milk.

Mr. De Vine seems to support the theory of milk causing human sore throat, as he says: "Streptococci are found in the milk of the affected quarter. Such milk is said to cause human sore throat."

I should like to ask if he has any statistics to bear out this contention, as it is very important that we should know exactly where we stand in this respect. In America, where statistics are very carefully kept and epidemics of septic sore throat appear to be common, the list of outbreaks in the State of Massachusetts traced to milk in the five years 1919-23, the source of infection in each case was from a carrier, and as Swithinbank and Newman have shown, although a number of outbreaks in this country have been milk borne, yet in no case was it definitely proved that the source of infection was not of human origin.

Dr. Savage and other investigators have made some very interesting experiments on streptococci found in milk. Dr. Savage concluded that the *Streptococcus mastitidis* was not the cause of human disease. Although, therefore, we may agree that the milk from a cow affected with acute mastitis should not be used, we need not necessarily alarm the public by ascribing to these organisms the cause of human sore throat.

A good deal of difficulty has been felt by inspectors in their dealings with cows affected with mastitis, involving only part of the udder, the milk from the other teats appearing to be normal, and especially do they feel difficulty where one quarter is not functioning or only secreting a small quantity of thick pus-like material due to an injury or a chronic mastitis.

I should like to ask Mr. De Vine's opinion whether this milk should be used, as I believe that the view of the Ministry of Health is that it should not. In dairy herds three-quarter cows are quite common, and it would be a very serious matter for the dairyman if the milk from these cows were excluded. The Milk and Dairies Act only excludes milk from cows affected with acute mastitis, but the Special Designations Order prohibits milk from cows having indurated udders and also enlarged supra-mammary glands.

I notice on page 110 "acute inflammation of the udder, mastitis, may be acute or chronic." Is this a printer's error?

I am sorry Mr. De Vine did not have more time to deal with the prohibition of milk from cows suffering from "any comatose condition" and "any infection of the udder or teats which is likely to convey disease," as inspectors should have some common policy in excluding milk under these heads, *e.g.*, is milk from cows affected with eruptions on the teats or udder due to streptococci and staphylococci to be prohibited? I have not yet heard any satisfactory explanation of what is meant by "any comatose condition."

On page 104 we read: The Milk and Dairies Orders provide, *inter alia*, "that every County and County Borough Council shall carry out the inspection of dairies and milking cows."

This requires a little amplification, as, although the inspection of milking cows is provided for when disease is suspected, yet unfortunately it is not made compulsory that routine inspections shall be made of all dairy cows. Some local authorities are carrying this out, but others, on account of the expense, only have inspections made when they have obtained evidence that disease is probably existing. I would urge the importance of a regular and routine examination of all dairy cows, at least four times a year, and I agree with Mr. De Vine's remarks as to the importance of taking samples of milk from all dairies for biological examination, although I would not go so far as to say that this should be done at least once a month. Some medical officers of health are very keen in this

respect, while with others this provision of the Act is almost a dead letter.

Mr. De Vine holds very strong views on tuberculosis and its prevention, but I would refute very strongly his contention that the present Act and Orders have no effect in reducing bovine tuberculosis in this country. Between September, 1925, and end of March, 1927, 792,000 cows and heifers were examined, of which 28,871 were condemned under the Order; about 2,000 of them had tuberculosis of the udder. In the First Schedule of the Act provision is made for compensation to dairymen when the supply of milk is stopped under Section 3 of the Act, but I have not heard of any compensation having been given under this provision. Some time ago I saw various officials of the Ministry with a view to getting some ruling in case owners demanded it, but got no satisfactory explanation. If milk from several cows has to be stopped until a biological test has been made, it entails considerable expense to the dairyman, and there seems no valid reason why he should not claim this compensation. Many thousands of badly infected animals are slaughtered annually, including a very large percentage of cows giving tubercle bacilli in the milk; this must lessen the amount of infection for the remaining cows, while the educational value of such visits of inspection must be very great. As to the cost of working the Tuberculosis Order, I know this varies considerably in different counties, but in those about which I have information it is considerably less than £5 per head.

It was never claimed for the Tuberculosis Order that it would stamp out tuberculosis, but it must be regarded as an adjunct to the Milk and Dairies Act, so that badly diseased cows may be isolated, slaughtered, and compensation given.

If all the cows are tested and the reactors branded, what is the owner to do with them? If he has the necessary accommodation the reactors might be separated from the healthy and the milk sterilised as suggested, but in many cases this will be impossible, and of course, would reduce the value of such animals very considerably. I fear it would rouse such an outcry in the dairying industry that it would never be adopted.

In America, in certain accredited areas, cows are tested by Government veterinary surgeons, the reacting cows are slaughtered and compensation given, but I am afraid our Government would never agree to this. Great advances, have, however, been made in the last few years in the dairying industry.

At many meetings of dairymen where I have attended, the seriousness of tuberculosis has been fully recognised, the advantages of a tubercle-free herd have been advocated very strongly and great efforts are being made in many localities to produce a pure milk from healthy non-tuberculous cows. This must be a gradual process, and I am fully convinced that in a few years' time the milk supply of this country will be revolutionised. (Applause.)

Mr. T. PARKER (Newcastle on-Tyne): As the title implies, the subject of Mr. De Vine's paper is one that can safely be considered as being of great importance not only to public health, but also agriculture.

As Mr. De Vine states, the general public, meat and milk consumers, Government Departments, Ministers of Health and Agriculture, and the stockowners, are all dependent upon the veterinary profession to carry out and maintain the objects of the many legislative Acts and Orders. It is rather unfortunate, particularly as this meeting will, no doubt, be attended by many practitioners who may not be quite conversant with the legislation as it stands, that a clearer conception of the position has not been given on page 104 in this paper. There are one or two important points to which I should like to be permitted to refer, but before doing so will endeavour briefly to refer to the Acts and Order.

I.—The Milk and Dairies (Consolidation) Act of 1915, according to the Milk and Dairies (Amendment) Act 1922, came into operation on 1st September, 1925, and not in 1922 as stated by Mr. De Vine.

II.—Mr. De Vine states that in the Milk and Dairies Act, the sale of milk from a cow affected with any of the following is prohibited:—

i. Tuberculosis of the udder;
ii. Emaciation due to tuberculosis;
iii. Acute inflammation of the udder.

One may be pardoned for stating that the Act goes much further. For example, Section V not only prohibits the sale or exposure for sale for human consumption or for use in the manufacture of products for human consumption, but also prohibits any person, even if he does not intend to sell it, to use or allow to be used in the manufacture of products for human consumption, the milk of any cow which has given tuberculous milk, or which is suffering from any of the three conditions enumerated by Mr. De Vine or from any of the diseases included in the Second Schedule, which are acute mastitis, actinomycosis of the udder, anthrax, foot-and-mouth disease, suppuration of the udder, and any other disease affecting cows as declared by a Milk and Dairies Order for the purposes of that section.

Under the Act the penalties for offences are: first offence £5; second offence £20; continuing offence 40s. daily. Again, Mr. De Vine states that the Milk and Dairies Order of 1926 prohibits the sale of milk from cows suffering from (here follows a list of eight conditions). Instead, what the Milk and Dairies Order of 1926 does in this connection is as follows:—

By Section 11 of Part IV it declares the three following conditions, namely—any comatose condition; any septic condition of the uterus, and any infection of the udder or teats which is likely to convey disease, as being diseases, for the purposes of Section V of the Act, in addition to those already specified in that Section.

It will be observed, therefore, that the nine conditions first referred to are included in the Act which operated as from 1st September, 1925, whereas the three last mentioned conditions were not added to the list until the 1st October, 1926, the date of operation of the Milk and Dairies Order.

As the title of the paper refers to legislation, before leaving this part of the subject it should be pointed out that according to Section V of the Milk and Dairies (Amendment) Act 1922, which came into operation on 1st September of that year, no person shall, by himself or by any servant or agent, sell or offer or expose for sale the milk of a cow suffering from tuberculosis of the udder, and if he does so and it is proved that he knew or could by the exercise of ordinary care have ascertained that the

cow was suffering from that disease, he will then be liable to a fine not exceeding £20, and for a second or subsequent offence to a fine not exceeding £100 or to imprisonment with or without hard labour for a period of six months, or to both such fine and imprisonment.

It may have been observed also that, whereas in the 1915 Act the sale or use, etc., of milk is qualified by the words "for human consumption," no such qualification appears in the Act of 1922, which provides for such drastic punishment for an offence. On page 108 Mr. De Vine states: "As regards the Milk and Dairies Act, which provides for the elimination of cows affected with tuberculosis of the udder, this Act is not likely to be productive of much good in those districts where they never take any samples of milk." Now, as a matter of fact, the Act does not provide for the elimination of cases affected with tuberculosis of the udder but, on the other hand, it does provide for the taking of samples. He is more accurate on page 105 where he states that the prevention of the infection of man by tuberculous milk is to a certain extent catered for in the Milk and Dairies Act, which prohibits the sale of milk from a cow affected with tuberculosis of the udder.

Although, as it has already been pointed out, the Milk and Dairies Act goes much further, one cannot help thinking, after reading his statements, that Mr. De Vine cannot have given the subject of his paper the amount of consideration it deserves, otherwise I feel sure he would certainly have given greater credit to those whose business it was to design not only the Tuberculosis Order but also the Milk and Dairies Order and the Acts of 1915 and 1922, for the more one considers them as a combination in relation to bovine tuberculosis the more one is inclined to believe that they at least made a very sound commencement in dealing with a most difficult subject.

Now, knowing that at present we have in operation legislation which provides for the taking of samples of milk, makes it illegal to sell for human consumption or use for manufacturing products for human consumption the milk from cows suffering from tuberculosis in udder, etc., and other conditions, and prohibits sale, under a large penalty, of milk from a cow with a tuberculous udder and, finally, provides for the destruction of every cow suffering from tuberculosis of the udder or giving tuberculous milk, and every bovine animal suffering from tuberculous emaciation, or suffering from a chronic cough and showing definite clinical signs of tuberculosis, besides providing, in the first instance, for the compulsory notification of the several more serious conditions, two questions naturally present themselves, namely: (1) What evidence is there indicating what inspections of cattle are necessary and proper for the purposes of the legislation referred to? (2) What evidence is there to indicate that, providing the present legislation be properly applied, further legislation is desirable or practicable as a commencement, other than that dealing with general hygiene and powers of veterinary officers?

In trying to answer the first question one might deal with Mr. De Vine's statement (page 104, bottom): "There are no really reliable statistics available of the percentage of tuberculous animals among the milking herds throughout the whole country." . . . . "There is no doubt that the percentage of affected animals in milking herds varies greatly up and down the country."

In the first place, one might safely state that on making inquiries into the existence of disease one will find on large farms that the percentage of tuberculosis amongst the animals will vary in the different sheds. So far as the herds throughout the country are concerned, I would like to direct your attention to certain information which has been obtained by examining mixed milk samples.

Annual Report		Samples collected and examined.	Found tuberculous.	Percentage.
1925.	M.O.H., Newcastle-on-Tyne	372	29	8.
1925.	De Vine, Birmingham ...	681	52	7·6
1926.	M.O.H., Glasgow ...	156	12	7·6
1925.	Brittlebank, Manchester ...	292 (farms)	24	8·2
1925.	M.O.H., Liverpool ...	482	36	7.46

From January, 1901, to December, 1925, 10,303 samples of milk from sources outside the city were submitted for bacteriological examination and 704 of the samples were found to be contaminated by tubercle bacilli, this being equal to 6·8 %. During the last 13 years the percentage averaged 7·85.

1925.	M.O.H., Leeds	77	5	6·5
1926.	Gofton, Edinburgh ...	101	11	10·8
1925.	M.O.H., Sheffield	913	91	9·8
1925.	Vet. Inspector, Salford ...	331	29	8·75

If, then, when the biological test has been applied to between three and four thousand samples of mixed milk, representing supplies from thousands of cows in districts scattered over such a vast area, and the result shows that there is a remarkable similarity in the extent to which infection exists at the sources of production, that is to say, the percentage of mixed samples infected averaging about 7·6; surely it is reasonable to suppose that the percentage of cattle actually affected with the disease in the same districts might possibly be found to agree in a similar way.

During recent years, with the view of determining to what extent ordinary dairy cows from various herds may be affected with tuberculosis, an extended examination and search, *post-mortem*, has been made on a number of animals sent into the city of Newcastle-upon-Tyne for slaughter for food purposes. The total number examined was 167. Ninety-eight of these animals were slaughtered because they had been fattened off after completing their milking period; the remaining 69 were from four small dairy herds (comprising 76 cows, one bull, and one calf) which were completely slaughtered out on account of outbreaks of foot-and-mouth disease. On examining the carcases and internal organs of the 167 cows, lesions of tuberculosis were found present in 137 or 82·3 per cent. Although it is intended to continue this investigation, the results thus so far obtained go to demonstrate that the percentage of dairy cows affected with tuberculosis in some degree is much greater than generally supposed.

Mr. De Vine states that the official handling of advanced cases of tuberculosis under the Order has no material effect in reducing bovine tuberculosis in this country. If he qualifies that by adding that under the Order "alone," without also keeping in continuous operation certain necessary details as to hygiene, then I agree that the result cannot be all that one desires.

Now, with regard to the second question, namely: What evidence is there to indicate that, providing the present legislation be properly applied, further legislation is desirable or practicable as a commencement other than that dealing with general hygiene and powers of veterinary officers? The answer to this question has some bearing on that of the first, besides, I think, supplying constructive criticism to Mr. De Vine's statement which is: "If tuberculous cows are slaughtered before they get to the stage of secreting milk containing tubercle bacilli, most of the cases of tuberculosis amongst children would be prevented." . . . "Therefore I contend it is economically sound to expend funds on eradicating tuberculous bovines which may any day become affected in the udder and secrete infected milk, etc." Whilst the truth of the first sentence is perfectly obvious relative to infection from a bovine source, the second is one that would appear to provide ample material for consideration, and is bristling with financial difficulties. For example: When it is intended to proceed with an attempt in the eradication of the disease, it is necessary to consider two routes, namely: the direct and the indirect.

To test all cattle and destroy the reactors would mean eliminating the great majority of dairy cows in the country, and, therefore, the milk supply. That, of course, is not suggested. To test all cattle and segregate the reactors from non-reactors would no doubt be the correct first step provided adequate facilities existed. But in the event of the public being asked to bear the cost of testing, which in reality would be another way of asking the public to bear the cost of improving the agriculturists' business, it would appear quite certain that no public funds would ever be expended in any such direction even for public health reasons, without the Chancellor of the Exchequer, through the medium of the Central Authority, having some say as to the returns necessary for any such expenditure. Such returns would, doubtless, include the strict observance of more drastic regulations, requiring better hygienic conditions under which animals were to be housed, control of the reactors, better facilities for isolation, greater cleanliness, more constant supervision, etc., etc., and it would appear that as a commencement all these conditions, desirable though they be, could not be amply met.

We have now arrived at a stage when it might well be asked, what is the alternative? In the interests of agriculture and public health, what procedure should be adopted?

When we bear in mind that:—

i.—The percentage of dairy cows affected with tuberculosis in some degree is a very high one;

ii.—The majority of tuberculous cows do not show clinical signs of the disease;

iii.—Although many tuberculous cows do not produce tuberculous milk, every tuberculous cow is a potential danger;

iv.—The carcases of a large percentage of tuberculous cows are free from disease and fit for food purposes;

v.—A considerable percentage of tuberculous cows, although apparently healthy, on being subjected to the tuberculin test, either by the subcutaneous or intradermal method, refuse to react; and that

vi.—The farmer or person in charge is not always able to detect and therefore does not report the early yet some of the most dangerous cases—we have, I think, ample reasons for pressing forward the urgent necessity for the regular and frequent inspections of all cattle, and dairy herds in particular, throughout the country. I might here point out that for this purpose Section 8 of Part IV. of the Milk and Dairies Act should be put into active operation in every part of the country as a first step. It reads as follows: "Every County Council and County Borough Council shall cause to be made such inspections of cattle as may be necessary and proper for the purposes of the Act and of this Order."

It might here be added that according to Sub-section 4 of Section 15 of the Act: "Any inspections of cattle made in pursuance of this Act or any Milk and Dairies Order shall be carried out by a veterinary inspector or other properly qualified veterinary surgeon."

Finally, if some of the difficulties pointed out have been sufficiently clear to demonstrate that regular and frequent inspections of all dairy cows at least, having regard to the dangerous nature of this disease, are necessary and proper for the purposes of the Act and Order it might not be considered out of place to pass some resolution to that effect.

That is to say, a resolution pointing out the necessity for the Ministry of Health pressing local authorities to employ the only prevention or safeguard at present, so far as the milk supply is concerned, considered adequate to meet the requirements of the words "such inspections of cattle as may be necessary and proper for the purposes of the Act and Order," namely, the regular and frequent inspections of cattle.

Administration. In the first place, the Public Health Act should be amended so as to give the powers necessary for the veterinary officer of a local authority to inspect meat, etc., without having to be appointed as a sanitary officer. Then, in each city, county or county borough, the veterinary officer should be appointed under the Health Committee for the purposes of Public Health Acts and under the Diseases of Animals Executive Committee for the purposes of Diseases of Animals Acts.

In each large city or county there should be a veterinary department, the veterinary officer being responsible to the committee concerned and whose duty would be in all public health matters to co-operate with, but not to be placed under, the medical officer of health.

The county should be divided up into areas:—

Each area { Meat Inspection. Dairy Inspection. Diseases of Animals Acts.

There would be many local veterinary inspectors acting in each county under the chief veterinary officer, who would, instead of the medical officer of health, be looking after his interests, organise and find him plenty to do and so develop the work to the best interests of the public. The time would then soon arrive when possibly it would be practicable, with the established departments, properly to deal with the gradual eradication of tuberculosis until a stage had been reached when we could all preach "Give your children raw milk and plenty of it."

Mr. HORACE L. ROBERTS (Ipswich): Permit me to offer my congratulations to Major De Vine for his very able

paper. It looks as if the mantle of that great pioneer, John Malcolm, has fallen upon his successor, for we have been treated to a fine treatise on tuberculosis. On page 106 he says: "I maintain that the official handling of these advanced cases of tuberculosis under the Order has no material effect in reducing tuberculosis in this country." Well, we are all agreed with that. Later on he says: "Previous to the introduction of the Order the advanced cases of tuberculosis in cattle died, or were slaughtered in a surreptitious manner, and often the diseased tuberculous meat was exposed for sale for human consumption. Thus the effect of the Order is a good one in the public health interest, in that it ensures the inspection of the carcases of such animals, but it would appear to have no material effect in the reduction of the disease among our herds." I am very glad to be able to read that statement because it is a public acknowledgment by our Association of some of the work which some people have done in securing that much desired object, the Tuberculosis Order of 1925, No. 2. I think our thanks are due to those people who took part in the Parliamentary debate and got the thing through within the space of a few days. The essayist admits that this Order has for its object the protection of our meat supplies from tuberculous disease. He also says that if the object is to reduce the percentage of bovine tuberculosis, then the present Order is inadequate. What our object is and what the Order is are totally different things. It is not the intention of the Order to eradicate tuberculosis from our herds, but merely to produce healthier milk.

On page 108 Major De Vine says that "as regards the Milk and Dairies Act, which provides for the elimination of cows affected with tuberculosis of the udder, this Act is not likely to be productive of much good in those districts where they never take any samples of milk." Where they never take any samples, I do not see how the Act does any good at all. There is not much good being done under the Milk and Dairies Act in the country districts. In the County of Suffolk the medical officer of health considers that one hundred samples of milk are sufficient. When you consider that we have twenty sanitary districts, that means five samples of milk are to be taken for each district, and as we have a cow population of 32,374 I do not see how that is going to do very much towards the eradication of tuberculosis.

The essayist says that he considers that if tuberculosis was a more acute disease and not a slow and insidious one, as it is, we could put up a more active fight against it. Agriculturists, for this reason, take only a secondary interest in it. It is apparent that the agricultural community, together with some public bodies, are not willing to deal actively even with the present feeble measures against tuberculosis in cattle. One of the handicaps of the Tuberculosis Order as considered by members of many such committees is that in many cases the expense is too great. It costs the public often £5 to dispose of a cow worth 30s. If £5 were employed in the detection and the eradication of the affected animals in an earlier stage, it would be much more economical for the community at large.

Now, with regard to that statement by Major De Vine, I may say that I have called for certain statistics from three of the principal counties in East Anglia, and I should like to acknowledge that my request was most courteously responded to. They have supplied me with certain statistics which the essayist suggested I should put on the blackboard for your information.

You will see the incidence of tuberculosis in the County of Suffolk (*i.e.*, cases which come within the meaning of the Order) for the year ended 30th June, 1927, is one-fourth of one per cent. of the total cow population of the county.

The incidence of tuberculosis in the county of Norfolk is slightly over one-half of one per cent. of the total cow population of the county.

The incidence of tuberculosis in the county of Essex is about one-and-a-half per cent. of the total cow population of the county.

The average amount of compensation cost in each case in Suffolk was £4 3s. 11½d., in Norfolk was £3 13s. 7d., in Essex was £6 10s. 6½d.

Perhaps the more generous rate of compensation paid is one factor which induces the Essex cowkeepers to report cases of tuberculosis more readily than they do in the counties of Suffolk and Norfolk. (Applause.)

Mr. HUGH BEGG (Hamilton): We have suffered a good deal to-day. Half a dozen men sitting near me have left the meeting who would have given us in a minute or two the fruit of their practical experience, but the time has been usurped, and speakers have traded on the good nature of the Chairman. Much of what we have had to listen to has been quite irrelevant, and this makes one tired and irritable. We have, indeed, missed a great deal and have had to listen to a lot of statistics that have merely had the effect of sending us to sleep (laughter)—and we must not forget that we have other important appointments to keep that were based on the programme hours as set down, and which we ought to keep with our lady friends if we are gentlemen. (Hear, hear.)

Sir JOHN MOORE: I am very sorry. Perhaps I am to blame.

Mr. HUGH BEGG: At our Conference in Dublin last year we kept right up to time, and if we are to be regarded as business men I submit we must see to this in future. (Hear, hear.) Last night we were privileged to listen to an excellent lecture by Sir John M'Fadyean in which he disclosed the great efficiency of Calmette and Guerin's vaccine, and a possible inference is that in future much of the control of tuberculosis may be accomplished through the use of this vaccine.

I disagree with Mr. De Vine in his statement, repeated five times on pages 106 and 107, that we cannot reduce the percentage of tuberculous cattle under the present legislation, and I am sorry he has ranged himself with those who believe that the killing out of advanced cases can have no effect in reducing the disease in our herds.

The Ministry were not warranted in giving us greater powers to begin with, but the time has now come for extending the Order.

I have an idea, which I have expressed in a paper to be read at the Congress of the Royal Sanitary Association of Scotland at Inverness next week, that the next augmentation of the Tuberculosis Order might be to force all local authorities to put the Order as it stands into loyal operation

for six months and then legislate for the killing out of all cows ten years old and over that are not certified to have passed the tuberculin tests. The milk situation throughout Great Britain during the past two years has been such that we could withstand the loss of the produce of ten per cent. of our milch cows. There has been an exceeding abundance of surplus milk and much spoiling of the mercies. After a year the age limit could be reduced, and this would have the effect of increasingly enforcing the rearing of calves on the produce of young cows that in great measure had not lived long enough to have udder tuberculosis.

The incidence of tuberculosis will decrease as we multiply the directions of our attack. (Applause.)

Mr. C. E. PERRY (Staple Hill, Bristol) : Major De Vine has asked those inspectors who are working under the Order to give their experiences. I am in the county of Gloucester, and it depends entirely on the County Council as to how the Tuberculosis Order and Milk and Dairies Act is worked. They first have to decide whether they shall appoint whole-time men or part-time men. The Gloucestershire County Council have decided to work the Order with the part-time veterinary inspectors appointed under the Contagious Diseases of Animals Acts. I have just finished going round my district for the first time, and have examined 4,000 cows. I have condemned, valued, and had slaughtered 67 cows. For what were they condemned ? The majority of cases are tuberculosis of the udder. My experience is that all cases where tuberculosis of the udder is well advanced the mesenteric glands are affected. Is this the experience of other inspectors ? How are we paid ? The Gloucester County Council has given us a shilling per cow per annum for two inspections. For the 67 cases I have condemned and had slaughtered I am to be paid £100, that is, less than £2 per cow.

Mr. ROBERT SIMPSON (Cockermouth) : In the county of Cumberland we were one of the first authorities to put the Milk and Dairies Order into operation. Our experience has led me to think that unless routine inspection is supplemented by the taking of samples, it will not effect any great improvement in the position.

Major RABAGLIATI (Wakefield) : In the West Riding of Yorkshire the county council has decided to carry out its obligations under the Milk and Dairies Order, and have a regular veterinary inspection of all dairy cows, the aim being to carry these out twice a year. The Ministry of Health, having made the Milk and Dairies Order placing the onus of veterinary inspection of cattle on the county councils or county boroughs, then issue a circular letter last January saying that they do not necessarily mean that a regular inspection is required, but in a word say " You can do what you like " ; a more weak and hopeless way of carrying out their own recommendations I cannot conceive. We know that a biennial inspection is not really enough, but in such a large area it is the most that we can even attempt.

A point that seems to me to be very unsatisfactory is that in a non-county borough which is its own local authority under the Diseases of Animals Acts, the veterinary inspection of the cows falls on the county councils, but when the county officials find any animal suspicious of tuberculosis they are impotent to serve any forms applying restrictions, but must notify their suspicions to the borough local authority who may or may not agree with them. Personally, in cases where such authorities wish to carry out their own inspections I should give them every encouragement to avoid unnecessary duplication of the work.

Mr. De Vine speaks of testing all milk cattle with tuberculin and branding the reactors. This branding of such animals was discussed recently by the Scottish Metropolitan Division, who came to the conclusion that, although it might be theoretically advisable, nothing would do more to hinder the use of tuberculin in practice.

I note that Mr. De Vine suggests the possibility of taking a sample of the mixed milk from all dairy herds once every month and submitting it to the biological test. He does not say how this is to be carried out in practice, but I might point out that in the district which I represent alone, this would require the use of 16,000 guinea pigs a month and 192,000 a year. There are many other points to which I should like to draw attention, but I regret that time does not now allow of this.

THE REPLY.

Major BRENNAN DE VINE, replying to the discussion, said : I would like to echo the remarks that Mr. Begg made yesterday. When I was preparing these few remarks on this important subject I found I had run to about three times the length of the space that had been allowed to me, and I then had to set to work to cut it down by two-thirds. Then we see others, who come up to open the discussion, given a great deal more time than the original essayist.

I am sorry that Mr. Lloyd and Mr. Trevor Spencer are ill and unable to be present, but we are glad to have been able to hear the valuable remarks sent to us by Mr. Lloyd, who, I observe, agrees mostly with what I have said. But, as a matter of fact, I did not come here to lay down the law. I look upon an essayist coming to the " National " as a man who has to provide fuel for discussion, and since I have been sitting here I have been congratulating myself on the fact that I have been successful in that respect.

Mr. Male took exception to what I have said that diseases of the cow were common to man ; but then he goes on to say that actinomycosis, anthrax, etc., are. I think that is quite enough to go on with, without tuberculosis.

I consider that in all cases of mastitis the milk should be stopped, and in all cases of cow pox the milk should never be used unless properly sterilised.

A few speakers have taken exception to my remarks that local authorities are not carrying out the Orders. They are not. The authorities who are not carrying out the Orders are the rural authorities. If every other county did as Cumberland and one or two others, the milk supply of this country would very much improve.

As regards tuberculosis, if you want to eliminate that disease you *must* take samples of mixed milk regularly. There is no difficulty in taking samples in the town areas. It does not take an inspector very long to take twelve samples from twelve churns.

As regards the Tuberculosis Order, I maintain that if you continue with it you will have the same amount of tuberculosis in five or ten years that you have to-day. By the time a cow can be dealt with under the Tuberculosis

Order she is far advanced in the disease, and long before that she has infected other animals in the herd around her.

I am sorry the time is cut short and that we were not able to have more than the opening remarks of Mr. Parker's paper. I hope subsequently that we will be able to read them in the *Record*. Mr. Parker suggests that further legislation is not required. What we want is to get legislation to make the local authorities carry out their duties under the Orders. In Gloucester they pay an inspector so much to inspect the cows twice a year. That is good, because it ensures that all the cows are inspected by a veterinary officer twice a year.

I should be glad to hear the full scheme Mr. Begg spoke of, in conjunction with other things. (Applause.)

R.C.V.S. Obituary.

Neill, C. E., 50 Talbot Street, Southport. Graduated, Edinburgh, 17th July, 1896. Died, 10th October, 1927.

. . . . . .

"Major C. E. Neill," says *The Manchester Daily Dispatch*, "was veterinary surgeon to the West Lancashire Army Service Corps. He was visiting Mr. F. Blomley, the principal of the Southport Technical Schoool, and was inspecting some Pekingese dogs owned by Mrs. Blomley, when he had a seizure and died in a few minutes before medical aid could be summoned. Major Neill was formerly president of the Southport Canine Society and was very well known among dog fanciers in Lancashire.

. . . . . .

Mr. J. B. Moore, M.R.C.V.S.

The *Irish Times* reports: "The death has taken place of Mr. J. B. Moore, of Keliroyde, Shantallow, Londonderry, a member of the Royal College of Veterinary Surgeons. Mr. Moore, who was a native of the County Antrim, spent almost all his professional life in Londonderry. In addition to having a large practice amongst the stock-rearers over a wide area of the North-West, he held for a long series of years the position of chief portal inspector in connection with the shipment of cattle from Londonderry. He was a careful and conscientious official. He had reached an advanced age and was unmarried."

Army Veterinary Service.

London Gazette—War Office—Regular Forces.

October 11th.—Captain E. Wallace to be Major (October 18th, 1926), with seniority July 1st, 1926, and remains seed. (Substituted for the notification in the *Gazette* of May 27th, 1927.)

Erratum.—It is regretted that on page 901 (Col. 2), in last week's issue of the *Record*, it was stated that Major R. G. Anderson (Kirkcaldy) presided over the Congress Session on the Morning of Wednesday, September 14th, at which Captain S. J. Motton's paper, "Lightning and Electric Shock in Animals" was discussed. The chairman on that occasion was Captain James Anderson, of Keith, a Vice-President of the N.V.M.A.

The Veterinary Record.

22nd October, 1927.

"A DANGEROUS STRUCTURE."

It is seldom, we imagine, that the alarm attendant upon the receipt of an official notification that your habitation is a dangerous structure, and that, for your own safety and that of the public, you must put your house in order forthwith, can be mixed with any measure of relief on the ground of timeliness. In the case of the Royal Veterinary College, however, the belated opening of the official eye to what has been patent for a decade to everyone else concerned could not have been more opportune.

Short of the *post-mortem* activities of the housebreaker, nothing can so stimulate the interest of the passer-by as the evidence provided by the process of shoring-up that he is witnessing the application of emergency measures to a case in which collapse is imminent.

The Re-building Fund Appeal Committee, then, will doubtless see to it that the service of this notice at such a moment yields the increased monetary support which it is potentially worth.

Whether or no the public can be made to do its part, evidence is not lacking that the members of the profession are commencing to "pull their weight" in this matter. Largely through their influence, an entry list of close on 5,000 has been secured for the Championship Dog Show, to be held at the Crystal Palace on Thursday and Friday, 27th and 28th October. Considering the number of championship shows that take place in the course of the year, these figures are most satisfactory. Alsatians, which had rather a slump at the recent Kennel Club Show, have once more regained their position at the head of the list, Cocker spaniels coming next, though they have not beaten Cairn terriers by many.

The many features of interest associated with the event should attract a great crowd of visitors. Princess Mary will attend about 3 p.m. on the second day, with the object of presenting the principal cups, and she has also signified her willingness to accept donations, either in the form of cheques, or by the presentation of the whole or part of the prize money won. We understand that a good deal of money has already been raised by collectors.

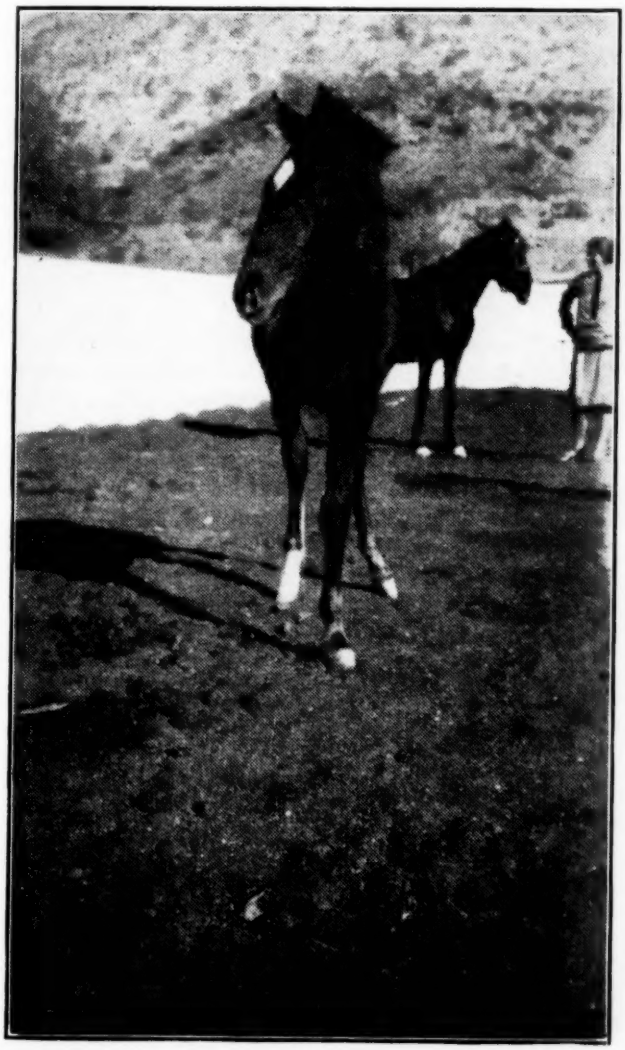
A noteworthy item of the proceedings will be the presentation, at five o'clock on the second day, of a lecture on "Distemper," illustrated by lantern slides, by Major G. W. Dunkin, Superintendent of the Medical Research Council's Field Research Laboratories at Mill Hill.

CLINICAL NOTE.

Rare Specimen from S.W. Africa.

By J. A. MAYBIN, M.R.C.V.S., Government Veterinary Officer, Walvis Bay.

The accompanying photographs of a three-legged foal may be of interest to my professional colleagues in the home country.



I regret that I am not in a position to describe anatomical details in connection with this subject, since I have not examined it except from photographs.

This subject, which was born about five months ago, only possessed two hind legs and one fore-leg at birth. The owner, Mr. H. Kahl, farm Kaliombo, Karibib District, S.W. Africa, in which district I served as veterinary officer prior to my transfer to Walvis Bay about six months ago, writes me to inform me that his three-legged foal is doing well, is in perfect health, and is running about "like the devil." Therefore, until I have had an opportunity to examine the subject myself, I shall leave it to those of my professional colleagues who may possess a more detailed and a more intimate knowledge of the anatomical peculiarities connected with the devil's mode of progression, to explain what the owner may have meant !

REVIEW

["**Manual of Veterinary Bacteriology,**" by RAYMOND A. KELSER, D.V.M., Ph.D. XII and 525 demy octavo pages with 86 plates. 1927. Baillière, Tindall and Cox. Price 25s.]

This work is intended "primarily for the use of those concerned with veterinary bacteriology," and in consequence only organisms which are pathogenic for animals are dealt with. As the author states in the preface, textbooks of veterinary bacteriology are very limited in number. At any rate, there are very few textbooks written in the English language which deal primarily or solely with the subject.

The present work is divided into 11 parts and there are 42 chapters. Some of the text is written in what may be described as a free and easy style.

Part I contains a historical introduction to the subject of bacteriology and a chapter dealing with bacterial morphology, physiology and classification. For the purposes of this work Dr. Kelser has adopted the classification arranged in 1923 by the Society of American Bacteriologists and an outline of this classification is given in this chapter. To many readers outside the United States this system will still be comparatively new. The author has wisely made provision for this contingency by giving the more familiar names at the headings of sections and in the index.

Part II comprises 74 pages dealing with bacteriological methods. The first chapter is devoted to a description of the microscope, others deal with the preparation of apparatus and of culture media commonly required in bacteriological laboratories. Then follow details of the methods of isolation and cultivation of ærobic and anærobic bacteria,

methods of microscopic examination and staining of bacteria.

On the whole, these subjects are sufficiently covered, but there are one or two obvious mistakes which should be put right in new editions. For example, the Berkfeld V filter is more permeable than the Berkfeld W and not as the author states. A full account is given of the colorimetric methods used for the determination of the hydrogen ion concentration of culture media.

The subject of infection and immunity has been compressed into 23 pages. As the author remarks on page 113, this subject cannot be dealt with adequately in a volume of this size. Nevertheless, we should have preferred more up-to-date treatment of the various problems. Many of the newer conceptions in immunology might have received brief notice without expanding the work unduly. For instance, allusion might have been made to Zinsser's views on the essential identity of antibodies, to the views of a certain school on so called local immunity and to the chemical and physical aspects of the general problem.

Part IV comprises 18 chapters and gives a general survey of the bacteria of importance in veterinary science. Criticism of a survey of this nature written by a single individual should be restrained, because opinions necessarily vary as to what should or should not be included. There are generally, however, certain omissions and expressions of opinion which cannot be passed over in silence and this work forms no exception. For example, on page 285 it is stated that the only diphtheroid organism of appreciable importance in veterinary medicine is the Preisz-Nocard bacillus. No reference is made to *B. pyogenes*, which was described in 1903 by Grips and which is responsible for important suppurative disorders in cattle and swine. There is no reference to vibrionic abortion in cattle and sheep, to Calmette's researches on immunisation in tuberculosis or to the work of Ramon and others on "anatoxins."

We cannot help feeling that the case for vaccination against bovine abortion by means of living cultures has not been fairly stated. There are still some observers who will disagree with the statement (p. 276) that the intradermal tuberculin test in cattle is more reliable than the subcutaneous test. Many people in this country will find it hard to believe that epizootic lymphangitis exists in England (p. 305).

Part V contains a description of the pathogenic fungi.

Part VI includes 67 pages, dealing with some of the common pathogenic protozoa. The opening chapter in this part is from the pen of Professor F. G. Haughwout of the Bureau of Science, Manila.

Part VII deals with the filterable viruses and, judging by the space allotted, the author attaches the greatest importance to rabies. Certain passages need revision. The statement (p. 418) that "vaccination of the lower animals against 'pox' is possible but is rarely employed," does not coincide with the fact that ovination as a preventive method has been practised on a large scale. The statement that the ordinary laboratory animals are not susceptible to foot-and-mouth disease requires qualification before it can be accepted as the truth.

Parts VIII to XI deal respectively with serology, hæmatology, preparation of veterinary biological products and the bacteriological examination of milk and water. In many respects these parts are the best in the book. Thus, Part VIII gives a good account of the serological tests commonly used in laboratories with instructions in the technique. In Part IX the technique of blood counts and hæmoglobin estimations is described. In Part X will be found information relating to veterinary biological products and the methods of preparing them. Finally, Part XI summarises in suitable form some of the established methods for the bacteriological examination of milk and of water.

Most of the plates are reproductions of photographs taken by the author himself. The majority are photomicrographs of various organisms in smears from cultures. These have been well taken, but readers would have preferred more detail as to the preparations photographed and of the magnifications used. References to the literature are conveniently given in the form of footnotes and the book concludes with a useful index.

The publishers' part of the work is well carried out.

F. C. M.

ABSTRACTS.

"Urea as a Remedy for Warts," by Dr. PIETZSCH, *Zeitschrift für Veterinarkunde*, Vol. 39, No. 9, Sept., 1927, p. 382.)

The author suggests that animals predisposed to warts should not be used for breeding purposes and that careful consideration should be given to the question of their segregation from those not so affected.

Discussing actual treatment, the author regards the great number of usually recommended remedies as a confession of failure to give an entirely satisfactory result. In his search for an improved means of eradicating warts, after hearing of the use of urea for the softening of scar tissue he used a 50 per cent. solution, which he injected into the skin below the wart with a canula, the amount varying from 0·25 to 1 ccm., and the number of injections also varying as the size of the wart required. Five horses were so treated and success was obtained in every case, the length of time taken for the wart to fall off varying from 4—30 days.

The advantages of the treatment are that, so far as can be observed, the injection is followed by no local or general painful reaction (beyond a slight swelling in one case, which very quickly subsided) and that, except in one case where a slight wound area was left, owing to the removal of part of the wart with scissors, the surface left was dry and smooth and the hair gradually grew again over the bare skin. No recurrence of the warts has been observed.

D. K.

COD-LIVER OIL AS FOOD.

The food value of cod-liver oil has been tested by the biological method. It has been found that a synthetic diet containing casein, salts, yeast, dextrin, and cod-liver oil as the sole source of fat-soluble vitamins suffices for normal growth and normal reproduction. The results obtained with cod-liver oil depend on the manner in which the oil is fed. When fed separately, abnormal reproduction records were obtained. Results were not nearly so favourable when cod-liver oil was incorporated in kilogram

(*Continued at foot of first column next page*).

DIVISIONAL REPORT.

North of England Division.

PAPER AND DISCUSSION ON JOHNE'S DISEASE.

A meeting of this Division was held at the White Swan Hotel, Alnwick, on 20th August, 1927, with the President, Mr. J. W. Rider, in the Chair, when the attendance book was signed by the following: Messrs. F. Pickering, H. Peele, W. A. Doughty, H. S. Elphick, W. Lyle Stewart, T. M. Mitchell, H. Hicks, E. H. Pratt, Geo. Thompson, J. H. Taylor, J. Davidson, C. Nicholson, C. G. Hill, T. Wilkinson and J. R. Rider, Hon. Secretary.

Visitors: Major G. W. Dunkin, Messrs. G. F. Pickering, and D. W. Henderson.

Apologies for absence were received from Messrs. W. H. Blackburn, C. Elphick, B. Hoadley, N. Irvin, T. R. Jarvie, A. D. Sanderson, A. Scott, W. Summers, W. Colin Welsh, W. B. Towell, J. J. McDowall, F. T. G. Hobday, D. Starkey, H. L. Hobson, and W. Jackson Young.

The minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read and were confirmed.

Correspondence. The Secretary read a letter received by him from the Editorial Representative of the *Veterinary Record*, asking for further contributions of a clinical nature for insertion in the *Record*. He appealed to members to maintain their interest in this section of the Association's journal.

A letter was read from the General Secretary, N.V.M.A., dated 14th July, 1927, referring to a suggestion that a Veterinary Inspectors' section should be formed within each Division.

Mr. H. S. ELPHICK thought that an Inspectors' Section should be formed, and suggested that veterinary officers of the Ministry of Agriculture should be invited to attend its deliberations.

Mr. PEELE felt that the letter from the "National" was somewhat vague because it did not specify the objects to be achieved by an Inspectors' Section. He regretted that he had been unable to attend the meeting of the National Council when this matter had been discussed, and consequently he did not know the reasons which induced the Council to recommend the formation of Inspectors' Sections within the various Divisions.

He assumed that the proposal was intended to apply more particularly to part-time officials, and that it was considered that further collaboration was necessary.

Mr. Peele remarked that the tendency in Public Health affairs was increasingly towards the appointment of whole-time officials, and thought that as this change was almost certain to become universal in time it should be appreciated by members. None the less, as part-time officials, they naturally desired to live as long as possible in that capacity, and he thought that an Inspectors' Section might help in that direction. Meetings would certainly be valuable for the discussion of points which arose from time to time.

A part-time official was usually the servant of a committee of a county council, and much depended on his relations with that committee if the part-time system was to maintain its position. He was perfectly willing to support the formation of an Inspectors' Section.

Mr. HILL said that the North of England Division covered the areas of three local authorities, and for this reason thought it desirable to form an Inspectors' Section. He formally moved that a section be formed, the proposal being seconded by Mr. PEELE, and carried.

The suggestion by the Hon. Secretary that the President and Secretary should be *Ex-officio* members of the section was also approved, and Mr. Peele was appointed Chairman on the proposition of Mr. HILL, seconded by Mr. DAVIDSON.

The President then called upon Major Dunkin to read his address.

Johne's Disease.

Major G. W. DUNKIN, M.R.C.V.S., D.V.H.: When addressing oneself to an audience of veterinary surgeons whose practices are mainly in rural areas and who frequently meet with Johne's disease in the course of their professional career, it would appear to be unnecessary to spend much time describing symptoms with which you are all so well acquainted.

For the purpose of clarity, however, I do propose without in any way wishing to presume on your good nature, to inflict on you the impressions I have gleaned as a result of a very close study of this foul disease over a period of three and a half years.

It was my intention, as you know, to make this disease the title of my preliminary article to you, but fates stepped in and a short illness unfortunately prevented me from so doing.

That preliminary article was read to the Royal Counties' Division of the "National" at their meeting at Oxford, and since then most of you have doubtless read the report of the meeting, as well as of the discussion which took

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(*Continued from previous page*).

quantities of the ration as when the oil was mixed in the ration daily. This is no doubt due to decomposition of the oil, either with formation of toxic products or the destruction of the vitamins, or both. The odour of the decomposed oil is similar to acrolein. Reproduction is much less favourable with filtered butter fat than with cod-liver oil.

V. E. NELSON, R. L. JONES, GEORGIAN ADAMS, and L. T. ANDEREGG (*Ind. Eng. Chem.*, 1927, 19, 840. Ex *Pharm. Jour.*, Oct. 8th).

ACTION OF PROLONGED CONTACT OF EUCALYPTOL VAPOUR ON TUBERCLE BACILLI.

At 37°C. the vapour of eucalyptol inhibits all development of cultures of bovine tubercle bacilli on potato. After twenty-nine days, although no growth takes place, the bacilli are still alive, and give normal culture if transferred to an atmosphere free from eucalyptol vapour. After thirty-six days in the eucalyptol atmosphere the bacilli are killed, and no longer give cultures when transferred to normal media and atmosphere. A guinea-pig, inoculated with 1mgm. of bovine tubercle bacilli and kept in a eucalyptol atmosphere for twenty-nine days, not only did not become tuberculous, but gained weight, and was living in good health three months after the experiment. It is evident, therefore, that bovine tubercle bacilli are relatively sensitive to the action of eucalyptol, and, if time enough is given to the exposure, may be definitely killed thereby.

P. FABRY (*Annales Institut Pasteur*, 1926, 40, 521.— Ex *Pharm. Jour.*, Oct. 8th.).

place, as published in the *Record*. This being so, I propose to assume that you are acquainted with what I said at that meeting, and I shall therefore omit a good deal of what was said there, and only lay stress on the more important points. I am one of those persons who thinks that the lesser good *only* emanates from a paper, whereas the greater benefit accrues from the discussion.

Johne's disease has been known in this country for many years, and was first described here by M'Fadyean, who originally suggested the name "Chronic pseudo-tuberculous bovine enteritis."

It has been described as a specific contagious enteritis of cattle and the pseudonym already referred to, although clumsy, appears to meet the advanced clinical case. In Germany, where it is very common, and also in France, it is called "Paratuberculosis."

Some years ago and when I was engaged in country practice, in a district which was literally teeming with Johne's disease, I was often struck by the fact that certain cows and even sometimes heifers, showed no symptoms until they calved, from which event they never seemed to recover, but gradually wasted and, if not killed, usually died. *Post-mortem* examination of such animals invariably showed evidence of such advanced lesions in the bowel that it was abundantly clear that such lesions had been present for some time, and the illuminating fact, which continues to puzzle me, is that no apparent disturbance seemed to have been caused until the general resistance of the animal had been reduced by some other cause. If this observation, which, of course is by no means new, and has doubtless been noticed by all of you, was correct, then the seriousness of the condition becomes alarming, for such animals, seemingly enjoying a perfect state of health are actually seriously ill and, what is more important, are a very definite menace to other beasts with which they come in contact, and for how long this menace has existed can only be a matter of surmise. The length of time which sometimes must have elapsed between infection and the onset of symptoms must be considerable—at any rate some months. It was this train of thought which set me to consider a scheme whereby one might be able to diagnose the condition *before* clinical symptoms set in and, on looking up the literature, one was not surprised to learn that the idea was by no means a new one. Efforts have, in fact, been made by many workers to manufacture a diagnostic, but success has not attended their efforts. The main cause for this was the extreme difficulty experienced in cultivating artificially on liquid media the causal organism. On logical lines it would appear that this is the first difficulty to overcome, because whatever the diagnostic be and however reliable, it has got to be specific for Johne's disease, and for nothing else.

It would be incorrect to say that we can now grow the bacillus of Johne's disease with ease on liquid media, but we can grow it with some difficulty. The diagnostic is prepared from the broth on the surface of which the organisms have been grown, in much the same way as tuberculin is prepared.

The organisms are incubated at 40 C., and until such time as the whole surface of the media is covered with the growth. This takes anything from three to eight months. The whole mass is then well shaken in order to get as good an emulsion as possible. It is then filtered through filter paper and the filtrate is placed on an evaporating bath and reduced to one tenth its original volume. The diagnostic, after adding 0.25 per cent. carbolic acid, is then ready for use.

I have been asked by one or two why I have named it TEPSIN, and it seems that this is a favourable opportunity to explain. As soon as I was satisfied that the material I had prepared did actually possess diagnostic powers, although of varying degree, an attempt was made to ascertain the cause or causes of this variation. Needless to say, considerable difficulties were experienced, and these have not yet been overcome. The organisms from which the diagnostic has been prepared has consisted of a mixture of three strains of the Johne's bacillus. These strains were Peto, Cow 28, and Strafford. I hesitated to call the diagnostic Johnin, because I was not, nor am I yet, in a position to say if other strains or mixtures of strains will give the same result, and the name tepsin, which is a composite word made up from the names of the three strains, was applied.

Conduct of the Test. This is carried out in precisely the same way as is the double intradermal tuberculin test, the only variation being that the dose of tepsin is 0.2 c.c. repeated at the 48th hour instead of 0.1 c.c. The interpretations are the same. In this respect I would point out, however, that one must not expect such large swellings as one gets in cases of tuberculosis. Further, one frequently gets a necrosis at the point of injection in animals which have reacted, and sometimes an adhesion between the swelling and the subcutaneous tissue is observed.

As far as I have been able to judge, it gives no reaction to animals suffering from tuberculosis alone, or to normal animals.

Up to and including September, 1926, all experiments had been carried out at the Farm Laboratories at Mill Hill, on clinically affected animals, which had been kindly presented to me by veterinary surgeons. These gentlemen have been thanked and their work acknowledged in my previous communication.

In October, 1926, Mr. Trevor Spencer, of Kettering, asked me to test a herd of cattle belonging to a client of his who had lost annually eight or ten animals from Johne's disease alone, and who was anxious, if possible, to try and eradicate the disease from his herd. This was the first, and is at present the only, complete herd on which I have used the test.

I sent Mr. Spencer a supply of tepsin and also tuberculin. All animals were tested with tuberculin on one side of the neck and with tepsin on the other. Mr. Spencer communicated with me on the third day of the test, and I gathered from him that the results were likely to be interesting. I was unable to visit the farm until the 96th hour after the commencement of the test, and at this time examined every animal with Mr. Spencer. The diagnosis had been made the previous day, of course, but the reactions were such that I was able to agree with Mr. Spencer in all cases, except one, twenty-four hours after.

Altogether, 49 animals were tested and the result was as follows:—

8 or 16·3 per cent. reacted to tepsin alone;

8 or 16·3 per cent. reacted to tuberculin alone;
13 or 26·5 per cent. reacted to both tests; and
20 or 40·8 per cent. reacted to neither test.

I considered this result to be very encouraging, for I was able to deduce several important points from its study. Firstly, it was clear that the one test did not interfere with the other; and it was also clear that the tepsin was specific for some condition which was present in 42 per cent. of the animals tested, and most important of all is the fact that the tepsin failed to give any reaction whatever to 40 per cent. of animals tested or, in other words, it had no effect on animals which were probably healthy. It was necessary to settle these points definitely, and an effort was therefore made to purchase some of these animals for purposes of *post-mortem* examination. Actually some were chosen which came under all four categories mentioned above, and these were subsequently delivered. A start was made on their arrival, but owing to the length of time which had elapsed since they were tested and their arrival at the laboratories (October 25th, 1926, to February 1st, 1927), it was deemed advisable to re-test these animals.

Some of the animals which had not reacted to the tepsin in October, 1926, gave a positive reaction on February 1st, 1927, and this applied also to some animals which failed to react to the tuberculin test in October, 1926. In no case, however, in which animals had previously reacted to either the one or the other did they fail to react again when retested.

All these animals have since been killed and then examined. Only two of these could be described as clinical cases. Some were poor, but, on the other hand, several were in first-rate condition.

I would like, at this juncture, to describe to you the case of a cow named "Honey Carnation," which was one of the batch I have referred to. This animal was one of these selected because she had passed both tests in October, 1926. She, with the others, was retested on February 1st, and reacted to both tests. She was killed and examined on March 1st, 1927. Her general condition prior to death was fair. She was by no means poor, she fed well, and her fæces were and had been normal. Taking the *post-mortem* examination as a whole, there was a complete absence of macroscopic lesions of either tuberculosis or Johne's disease in uncut organs or glands. The following organs and glands were examined: lungs, ileum, small intestine, rectum and bronchial, ileo-cæcal, large intestine, small intestine, and supramammary glands.

In the intestine, lesions of Johne were exceedingly difficult to find. The ileo-cæcal valve, except for a few small pin point hæmorrhagic spots and a very slight œdema, showed nothing abnormal. A few patches of the small intestine showed linear inflammation, but these patches were spotty and not very extensive. The lymphatic glands from the cæcum and small intestine were slightly œdematous. Bronchial glands were macroscopically normal. Straight smears from small intestine, its gland, the cæcal valve and its gland were all positive to Johne, there being massive fields everywhere. Smears from bronchial glands were negative.

I produce for your inspection sections from three centres of infection of this cow, and also one or two tubes of living cultures from the same organs.

I now have a word to say about the seriousness of the disease. There can be no question, I think, that the disease is as great a menace as is tuberculosis, if not greater, to the agricultural community. It is a menace because, up to the present, no reliable method of diagnosing the condition in its early stages has been produced; it is a menace because there is no known cure for it, and finally, it is a menace because we do not fully realise the firm hold it has obtained on our cattle and the vastness of its extent. The results of the investigation I was privileged to carry out with Mr. Trevor Spencer demonstrated clearly how vast this can be in herds.

I should like to see Johne's disease listed among the scheduled diseases of the Contagious Diseases Animals Acts. It has already been stated that Sir John M'Fadyean, as long ago as 1908, had in mind this possibility. If the need were present then, what can be the position to-day, after nineteen years of relative masterly inactivity and with the disease gradually spreading its tentacles slowly but nevertheless surely among our herds?

It is clear, of course, that compulsory notification of Johne's disease cannot take place until we have a weapon in the hands of the general practitioner which will help to remove the present difficulties of diagnosis in the early stages.

Veterinarians engaged in country practice in which Johne's disease exists will, I feel sure, readily agree with me when I say that if only the true etiology of the condition could be established, the length of time which usually elapses between infection and the onset of symptoms, we should realise more fully than we do to-day perhaps, how vastly important it is to the stockowner that its ravages should be made to cease. The annual economic loss to agriculture from Johne's disease alone must be stupendous, for, apart from the ultimate and absolute loss of the diseased animals, there is the gradual loss of condition and, of course, market value, diminution in milk yield and infection of other animals and pastures.

By way of conclusion, there are one or two points about which I have been asked to speak.

The first of these is the possible influence of other conditions which may have a debilitating effect upon the animal system and in this way act as a predisposing cause to Johne's disease. I believe this to be so. The act of calving, previously referred to, is a very common predisposing cause, and is well known to most of you, and the fact that definite clinical symptoms so frequently set in after such an event, rather suggests to one's mind that the lowering of bodily resistance must play a fairly important part in the rapid advance of an already quiescent disease. In districts where they occur I am also of opinion that worm infestation will act in a similar way, particularly if the infection is a severe one.

A further example of debility acting as a predisposing cause of Johne's disease was described by me in the *Veterinary Record* early in 1922. You will all doubtless remember the very dry summer of 1921. During this period cattle belonging to a man who farmed in my area in East Kent were turned out in marshes which were bounded on one side by a structure called a sea wall. This is an earthern bank built up to a height of approximately 20 ft. or more to prevent the sea encroaching on to the

marshes. The absence of rain and the presence of the cattle soon removed any vestige of water from the already depleted dykes. The continuance of the hot sun produced cracks in the parched walls of the sea wall, through which the sea percolated when the tide was " in." The cattle, already poor, owing to lack of sufficient drinking water, commenced to die, and the owner, very unwisely, commenced legal proceedings against the County Council for damages for loss sustained by the death of his cattle. He stated that the cause of death was the drinking of contaminated sea water which had percolated through the broken sea wall, and as this would not have occurred had the County Council kept the sea wall in a proper state of repair, the Council was clearly responsible.

At the time I am speaking of I was acting as official Veterinary Surgeon to the County Council on other matters, and I was also veterinary advisor to the owner of these cattle.

The position for me in this matter soon became exceedingly difficult, for I was asked by both parties, (and the request from each reached me by the same post) to hold the necessary *post-mortem* examinations in order to ascertain the actual cause of death, and to give an opinion as to whether I considered sea water to be deleterious in any way to cattle.

After much correspondence from me pointing out that difficulties might conceivably arise if I acted for both parties it was ultimately decided by all concerned that I should so act.

The *post-mortem* examination of several cattle remaining on the marshes which were stated by the owner to be showing symptoms identical with those shown by others which had died, gave ample evidence of the presence of a pretty severe type of Johne's disease. In passing, you may be interested to learn that I have since been unable to induce cattle to drink sea water from this particular area of their own accord, and although such experimental cattle were deprived of other water for many days in hot summer weather they preferred to remain thirsty and waste away rather than drink it. Further, if such sea water is drenched to cattle in large quantities for a fairly long period, diarrhœa is not set up but, on the contrary, a constipation appears accompanied with blackened fæces if any are passed. Frankly, I believe these cattle, which were of the store type, were affected with Johne's disease before they were turned out in the marshes, and that the deprivation of water supply acted as a predisposing cause of the disease which, when once it gained a strong footing, rapidly killed off the beasts.

The last item to which I have been asked to make reference is my usual procedure when examining either fæces or bowel for the presence of Johne's disease. There are two methods which are commonly used by us.

(1) Suspected bowel is finely cut up with scissors and then well ground up in a mortar with fine sand, silver or quartz. Twenty per cent. antiformin is added to kill off other organisms and the whole is centrifiged for twenty minutes. The supernatant fluid is then poured off and normal saline added and well mixed with the residue. Centrifuge again and re-wash with normal saline and centrifuge again. The residue is then fit to be examined for the presence of Johne's bacillus. This material can also be used for planting, for the addition of the antiformin has killed off organisms other than *B. tuberculosis* and *B. Johne*. The addition of the antiformin is unnecessary for ordinary examination of material, for a counter stain will easily differentiate between acid-fast and non-acid-fast organisms.

(2) The second method consists in making an emulsion of fæces with normal saline, well shaking and then allowing to stand for about ten minutes. It will then be observed that there are three layers—a top, consisting of hay and such-like materials, a bottom consisting of the heavier materials, and a middle layer, which is almost transparent. This middle layer is taken and well shaken with 0·25 per cent. of olive oil. After this petrol to half its volume is added and a further shaking takes place. The whole is then centrifuged and the bottom layer is examined for the bacilli.

I am immensely grateful to you for having honoured me by your invitation, and more particularly for the very careful attention you have given to me to-day, I can only hope that what I have said has been interesting, for I cannot hope that what I have said has been instructive. My visit has been a real pleasure and one that I have looked forward to for some weeks. Your very thorough and indefatigable Secretary has left nothing to chance to make my visit a perfectly satisfactory and enjoyable one.

At the conclusion of his paper Major Dunkin passed round charts illustrative of the reactions to the tepsin test, and also microphotographs of sections of cæcum and cæcal gland from specimens sent to him by the Secretary. He also demonstrated microscopically the sections which had been photographed.

Discussion.

The Hon. Secretary, in opening the discussion, said that he had not anticipated that this task would fall to his lot, but as Major Dunkin had specifically mentioned one of his cases, he might perhaps complete the story of that animal by describing the picture presented on clinical examination.

This cow was one of a series which was alleged to be suffering from the effects of drinking polluted water, and was seen by him in company with Mr. Hill.

The cow was seen on the 23rd June, and found to be in a moribund condition, extremely emaciated, recumbent, and unable to rise. It was passing blood-stained fæces, containing air bubbles. The animal was slaughtered on the next day, and a *post-mortem* examination, made within a few hours of death, showed advanced lesions of Johne's disease with extravasation of blood into the bowel lumen. Specimens from this animal were available for examination. Direct smears from the intestinal mucous membrane and mesenteric glands showed the presence of many acid alcohol-fast organisms, and similar organisms were found in the contents of the large intestine, although in this situation they were not so readily demonstrated. The speaker then related his experiences in the case of three other animals of the same series, and one bullock on another farm in which the tepsin test had been used.

The character of the swelling obtained in these cases had not been diffuse, and, except in one case, not tender.

Skin measurements had been carefully recorded, but it was felt that there was a difficulty in arriving at a correct interpretation of the test.

All the results had been submitted to Major Dunkin, who expressed the opinion that with the exception of one heifer they were negative. This heifer had skin measurements of 6 m.m. at the beginning of the test and 12 m.m. at the 72nd hour, while the swelling was firm, circumscribed, and tender. This heifer also gave a definite reaction to the double intradermal tuberculin test.

The bullock formed an interesting case, because there was no legal issue at stake, and it was possible to make a *post-mortem* examination shortly after the completion of the test. The skin measurements of this animal were 6·5 m.m. at the commencement of the test, and 11 m.m. at the 72nd hour, the swelling being circumscribed, but not painful. This reaction was interpreted as negative and no evidence of Johne's disease was found on *post-mortem* examination.

Mr. Rider asked Major Dunkin where one could draw the line between reactors and non-reactors, since it appeared that border line cases might be difficult to diagnose correctly. Was there any relation between the intensity of the reaction and the extent of the lesions? He also asked for the result of the bacteriological examination of the "Cambridge cow," to which reference had been made at the Royal Counties' meeting, when the cow was described as having reacted to the test, but as failing to show macroscopic lesions of Johne's disease on *post-mortem* examination.

Mr. H. S. ELPHICK thanked Major Dunkin for his most interesting paper and said that they would all be glad to try his diagnostic as opportunity offered. He enquired whether anything in a curative direction had been attempted.

Mr. HILL said that the paper had opened up a big field. It was his belief that Johne's disease was very common and serious. If tepsin could be made reliable it would be a valuable weapon in the hands of the practitioner. In support of his statement that Johne's disease was a serious menace he quoted the case of one farmer, whose farm he had visited in conjunction with the Hon. Secretary. This man had lost five animals before any attempt was made to ascertain the cause of death. *Post-mortem* examinations were subsequently made on four animals, and in each case advanced lesions of Johne's disease were found. It seemed reasonable to assume that the previous five deaths had been due to the disease, resulting in great loss which possibly might have been prevented.

In the case of a grazing farm he hoped tepsin would become a valuable means of detecting those animals which should be slaughtered in the early stages of the disease, before they advanced to the hopeless clinical condition. In his experience treatment was hopeless.

Comparing the tepsin reaction with that obtained in tuberculin tests, Mr. Hill said there appeared to be a rather marked difference, and he would welcome information as to how to differentiate between reactors and non-reactors. He also asked whether a joint infection of Johne's disease and tuberculosis was common.

Mr. PEELE thought that tepsin would provide a valuable supplement to the means already at their disposal in dealing with Johne's disease. The disease was very common, and it was frequently a source of worry to decide on the advice to be given to owners. Occasionally cases were reported under the Tuberculosis Order. One such animal which he recalled was a cow nursing a calf, and grazing with several other cows. The conditions appeared suitable for testing.

What was to be the procedure, assuming that a fairly large percentage of reactors was found? Should they be immediately removed? or isolated to get into as good a condition as possible for the butcher?

He had not had any experience of testing, but would be glad to do so. Mr. Peele also was interested in the interpretation of the test, and thought that possibly there was no clear line of demarcation between reactor and non-reactor.

Mr. DOUGHTY said he had carried out some tests. He thought animals were not infected until twelve months old, and might not show lesions until two years old. It should be remembered that sheep also suffered from the disease, and difficulties might arise under this heading. He thought the disease could not be scheduled under the Contagious Disease of Animals Acts because the farm might remain infected up to two years, and it would be impossible to close premises for this period.

Mr. STEWART said there could be no doubt about the importance of the disease. He had seen the disease in two bovine animals under one year old, to be precise, at the age of seven months. These animals had been housed with six others, and had had no opportunity for infection from pastures.

He was interested in the intradermal test and noticed that the broth was concentrated to produce the diagnostic. Had Major Dunkin used the broth before concentration for subcutaneous tests? He believed that Twort and Ingram had claimed good results for this method in their excellent monograph on Johne's disease. Mr. Stewart mentioned an American preparation, Johnin-Mulford, which was claimed to have diagnostic properties. He had not seen a case of Johne's disease in sheep, although he had made a large number of *post-mortem* examinations on this animal. Mr. Stewart also asked for information on the variation, if any, between the strains of the Johne's bacillus which had been cultivated.

Mr. MITCHELL expressed surprise at the statement that Johne's disease was more prevalent than tuberculosis. This was not the case in his practice amongst adult dairy cows. He thought that in the sea-board area of County Durham, at least, Johne's disease was rare.

Mr. DAVIDSON said he rarely saw Johne's disease. It did not appear to be prevalent in the City of Newcastle. None the less he had been deeply interested in Major Dunkin's excellent paper, and would be pleased to co-operate as far as lay in his power.

Mr. PICKERING expressed his great pleasure at Major Dunkin's paper, and asked whether the latter gentleman had observed that cattle affected with Johne's disease, specially roans, turned lighter in colour.

Mr. HICKS said he did not frequently meet Johne's disease. He wondered if Major Dunkin had used an ophthalmic test in conjunction with the double intra-

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Imperial Agricultural Research Conference.

Mr. Walter Guinness, the Minister of Agriculture, opened the Imperial Agricultural Research Conference on Tuesday, October 4th, in the Grand Committee Room, Westminster Hall, and in the evening the delegates were the guests of the Government at a dinner in the Royal Gallery of the House of Lords. The conference has as its main objects the establishment of closer co-operation in agricultural research work throughout the Empire, the setting up of additional research stations in tropical and sub-tropical countries, the creation of greater Imperial bureaux, and the recruitment, training, and interchange of research workers. The delegates number 170 and include about 70 from oversea.

Among the countries represented, in addition to Great Britain and Northern Ireland, are Canada, Australia, New Zealand, South Africa, Irish Free State, Southern Rhodesia, India, Barbados, British Guiana, Ceylon, Cyprus, Gold Coast, Kenya, Leeward Islands, Malaya, Mauritius, Nigeria, Nyasaland, Palestine, Sierra Leone, Tanganyika, Trinidad, Grenada and Windward Islands, Uganda, Zanzibar and Sudan.

The Chairman of the Organising Committee is Lord Bledisloe, Parliamentary Secretary to the Ministry of Agriculture, and in addition to representatives of the Ministry of Agriculture, the Colonial Office, the Board of Education, the Scottish Education Department, and members of the Agricultural Research Council of Great Britain, the conference includes the High Commissioners for the Dominions, representatives of the Empire Marketing Board, the Department of Scientific and Industrial Research, the Imperial Institute, Board of Agriculture for Scotland, Department of Overseas Trade, the Forestry Commission, the Medical Research Council, the Imperial Bureaux of Entomology and of Mycology, the Overseas Settlement Department, the University Grants Committee, the Linen Industry Research Association, and the Empire Cotton Growing Corporation.

The full conference sat until Friday, October 7th, and the agenda included administrative and technical questions and subjects relating to the recruitment, training and interchange of workers, Imperial bureaux, and interchange of information. Commissions have been appointed and parties of delegates are visiting institutions and works in different parts of the country. The full conference will reassemble on October 24, and several days will be devoted to the consideration of the reports of the different commissions. The concluding plenary session will be held on October 28, but the programme of visits to research institutions in the country will be continued into November.

The following are the committees and their chairmen :—

Veterinary Science (Sir Arnold Theiler) ; Animal Nutrition (Dr. J. B. Orr) ; Animal Genetics (Dr. Crew) ; Dairying (Dr. S. S. Cameron) ; Soils and Fertilisers (Sir John Russell) ; Plant Pathology, including Mycology (Sir David Prain) ; Plant Breeding (Professor A. E. V. Richardson) ; Fruit (Dr. W. T. Macoun) ; Entomology (Dr. G. A. K. Marshal) ; Agricultural Economics, including Marketing (Mr. C. S. Orwin) ; and Preservation and Transport (Mr. H. T. Tizard).

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Mr. Ormsby-Gore (Under-Secretary for the Colonies), in introducing, on October 7th, the subject of the establishment of Imperial Bureaux, said that some people thought it impossible to separate animal and plant genetics, but he believed the best course would be to start a bureau of plant genetics. In the organisation of research the veterinary field, in the proper sense, including animal hisbandry, animal nutrition, and animal genetics, was one of the utmost importance. They must drop the expression "veterinary surgeon" for "veterinarian." The British Empire offered a unique field for advance in knowledge in the veterinary field. In spite of what had been done, there was no field where there were greater gaps or more need for scientific endeavour. Some thought that until recently veterinary science had been working too much in water-tight compartments and had suffered from lack of recognition and assistance. The conference might consider that some far-reaching recommendations from them in regard to the advancement of veterinary studies throughout the Empire were called for, but limiting himself to bureaux he suggested for consideration the establishment of Empire bureaux for animal nutrition and animal genetics. Each new bureaux would probably cost on an average £10,000 a year. He threw out the suggestion that the conference should consider the practicability of at least three new bureaux—soil, science, plant genetics and animal nutrition.

Sir Arnold Theiler advicated the centralisation of veterinary science at some place in the Empire, preferably London. A survey might be made of the problems, and the places ascertained where they could be most suitably solved.

Dr. C. J. Reakes (New Zealand) supported the establishment of a bureau for veterinary science or animal diseases.

Sir. D. Hall (Ministry of Agriculture) said the strict bureau organisation was only likely to succeed where there was administrative work to do and information to be exchanged between officers engaged in that particular type of work. There was probably ample scope for a veterinary bureau, provided it did not attempt to cover the range of veterinary science. If for agricultural science there were some central station where workers on the subject had a right to apply for information, it would be valuable. It would be of advantage to a worker on the soil to know that he would correspond with Rothamsted and get help. He believed the idea of correspondence was likely to be more fertile on many subjects than that of the bureau.

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(*Continued from previous page.*)

dermal method, and whether it had been possible to check the results against avian tuberculin.

Would antiformin destroy acid-fast organisms other than those of tuberculosis and Johne's disease, *e.g.*, the smegma bacillus, and acid-fasts of dung and Timothy grass ? He would welcome information on the actual process of decolorisation, particularly the strength of acid used after the Ziehl Neelsen stain.

(*To be continued by the essayist's reply*).

" It was interesting to observe," says *The Times*, " that at the recent Imperial Agricultural Research Conference in London stress was laid on the need for greater concentration upon the study of animal diseases and pests. Knowledge regarding the ills that afflict the animals of the farm or the ranch is sadly deficient. This is not the fault of the veterinary profession, but is due to a strange neglect of problems that may be intricate and difficult, but are not inferior in importance for the agricultural industry to any that can engage the attention of scientists. No country has been less appreciative of the urgency of this question than our own, although, being traditionally and supremely a stock-breeding country, it might have been thought that animal pests and diseases would have had priority in the application of scientific research. It is late in the day to turn to this vexed line of study now ; but not too late. We are behind certain other nations in the matter, but the present is a good time to make a serious start, and with ample material upon which to work, and results to indicate the lines to pursue, it may be hoped that no further time will be lost in organising a scheme of operations appropriate to the magnitude of the subject."

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Oct. 24th—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, 4-30 p.m.
Oct 26th—Meeting of the Comparative Medicine Section of the Royal Society of Medicine.
Oct. 27th—Royal Veterinary College Championship Dog Show, Crystal Palace.
Oct. 27th—Lecture by Major Dunkin, on " Distemper," Crystal Palace, at 5 p.m.
Oct. 28th—Presentation of Prizes by H.R.H. Princess Mary at Royal Veterinary College Dog Show, Crystal Palace.
Oct. 28th—Meeting of the Yorkshire Division at Leeds.
Nov. 3rd—Central Division Annual Dinner.

The Congress Number of the " Record."

Members desirous of securing additional copies of the Congress Number of the *Veterinary Record* (October 8th), or of the N.V.M.A. Handbook, are requested to apply without delay to the Editorial Representative, N.V.M.A., 10 Gray's Inn Square, W.C.1.

Colonial Veterinary Services.

A Government Inquiry.

The Secretary of State for the Colonies has appointed a Committee to inquire into the organisation and efficiency of the Colonial Veterinary Services, and to make suggestions for increasing their efficiency. The terms of reference of the Committee are as follow :—

To frame proposals for obtaining the highest degree of efficiency in regard to veterinary research and administration in the non-self-governing Dependencies that financial considerations permit.

The questions to be considered would embrace the recruitment and training of veterinary officers, their conditions of service, the organisation of research and intelligence, the setting up and support of any institutions required, and methods by which the financial expenditure involved can best be met.

In framing their recommendations the Committee should bear in mind that the principle of the ultimate creation of a Colonial Scientific and Research Service has been approved by the Colonial Office Conference, and that specific proposals for the formation of an Agricultural Scientific and Research Service for the non-self-governing Dependencies, with which the veterinary service must necessarily maintain close *liaison*, are now being framed.

The Committee consists of :— Lord Lovat, K.T. (Chairman), the Right Hon. W. Ormsby-Gore, M.P., Sir Arnold Theiler, K.C.M.G., D.Sc., Professor J. B. Buxton, M.A., F.R.C.V.S., D.V.H., Professor R. T. Leiper, D.Sc., M.D., F.R.S., Dr. W. H. Andrews, D.Sc., M.R.C.V.S., Dr. J. B. Orr, D.S.O., M.C., F.R.S.E., Mr. W. C. Bottomley, C.B., C.M.G., O.B.E., and Major R. D. Furse, D.S.O.

It is proposed to add to the above at an early date an additional officer with experience in the Colonial Service. Major G. S. M. Hutchinson, Colonial Office, is secretary to the Committee.

The Colonial Delegates.

The proposal to give a dinner in honour of the Colonial Members of the Royal College who are now in London has, we are informed, been reluctantly abandoned. Owing to the number of other engagements already made for the Delegates at the Imperial Agricultural Research Conference, it has been found impossible to fix on a date suitable to the delegates which would give sufficient time to organise a successful dinner. This is a disappointment, but we hope that the Colonial representatives will find their way to the Dinner of the Central Veterinary Society on November 3rd.

Personal.

Marriage.—October 3rd, 1927, at St. Patrick's Church, Ballymena, by the Rev. W. J. Parr, M.A., assisted by the Rev. J. A. Cullen, David F. McKinney, M.R.C.V.S., third son of Mr. and Mrs. J. H. McKinney, " Edinbank," Ballymena, to Lilian J. Neave, elder daughter of Mr. W. G. Neave, Ormiston, Belfast.

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Appointment.—Mr. C. A. McGaughey, M.R.C.V.S., D.V.S.M. (Vict.) has been appointed Assistant Lecturer in Bacteriology at the University of Manchester.

The Editor acknowledges the receipt of the following :—
Quarterly Report of the Chief Veterinary Inspector, Cumberland.
Communications from Messrs. J. M. Armfield and W. A. Campbell.

Miscellaneous.

JAMES BLAKEWAY, M.R.C.V.S., Osborne House, Stourbridge, for over thirty years SPECIALIST IN THE CASTRATION OF RIG HORSES, still operates for members of the profession. Horses insured before operation if desired.

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